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EIGHTEENTH YEAR, 1912

HELIOPOLIS KAFR AMMAR AND SHURAFA

BY
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AND
ERNEST MACKAY
WITH CHAPTERS BY
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Though last winter the war hindered the continuance of excavations, it is hoped they will be resumed, so soon as the position is more settled, with assistants who are not required in Government service. Meanwhile the volumes for 1914 on Lahun and Harageh are delayed by various causes; and, in lieu of the usual volumes on excavation for 1915, subscribers will receive a work on the scarabs in University College, with over 2,000 illustrations of objects bearing royal and private names.

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HELIOPOLIS

BY W. M. FLINDERS PETRIE

INTRODUCTION

1. THE excavations described in this volume were carried on in the winter 1911–12: but owing to the pressure of later work the publication has been delayed, as it was not the most important work of the year. Four sites were attacked, two of which have been finished, while the other two have been left for the present owing to interference from outside causes.

At the end of November, 1911, Mr. Mackay and Mr. Engelbach went to the site of a Roman town near El Shurafa, seven and a half miles south of Helwan, and opposite to Mazghuneh, where Mr. Mackay cleared the bases of pyramids in the previous season. Mr. Elverson and myself joined them on December 1; but after a week I had to leave owing to the results of a chill. The work was continued there for about three weeks, and then the party moved on about twenty miles south to Atfih. As soon as work began there, in ground officially registered as open to the British School, Mr. J. de M. Johnson objected, as he wished to extend his permit; accordingly we withdrew, and nothing more has been done there since by any one.

We then all concentrated on Kafr Ammar, where Mr. Wainwright was already at work; my wife took part in all the work there, and Mr. Lawrence joined us during most of our time. The work began on January 14, and the main results of two seasons' work on the 1st dynasty has appeared as *Tarkhan I* and *II*. That name was used as the cemetery was nearest to that hamlet; but for the later remains there, the name of Kafr Ammar, the nearest village and railway station, has been adopted for distinction of period. On February 25 I left for Heliopolis, where Mr. Engelbach had preceded me, while Mr. Mackay packed up at Kafr Ammar and later went on to Memphis. I have to thank Miss Murray for the tabulating and reduction of Mr. Mackay's results.

At Heliopolis, the site of the temple I found to be now entirely the property of His Highness the Khedive. I applied to Brewster Bey for permission to excavate in that land, but owing to His Highness's absence at Alexandria, I could not receive permission for three weeks. Thus it was not till March 21 that I could negotiate with the tenant of some land near the obelisk. There was no difficulty with the people, and the land was restored at the close of the work to the complete satisfaction of the tenant and of the bailiff. The excavation was finished by the middle of April, and I left on the 18th.

The reason for not resuming work there, as I had hoped to do, is the change in the Egyptian law. Now that the Government claim property in all antiquities in private land, only half of such can go to the excavator, although the cost of hiring the land and restoring it to cultivable state is a serious extra charge. Moreover, on the great temple sites of Memphis and Heliopolis, the heavy cost of working far below water level has to be incurred. Even when all the antiquities went to the excavator, the returns would never compensate the cost of the work, which was only done for the chance of historical information. Until the Government will consent to renew the same terms as before, all such costly temple clearances under water must remain suspended.

CHAPTER I

HELIOPOLIS: THE SITE

2. THE whole area of the ancient city of Heliopolis was included within walls, which remain prominent along the west side bordering the canal,

and on the north side. Within this city circuit, but almost touching the east and west sides of it, lies the great temenos of the temple, shewn in pl. I. On the south of the temple site the ground is cultivated, and nothing can be done. On the north of the temple there is a large area of bare ground of ruins which can be examined. Most of it is however covered with scattered huts and houses which hinder excavation. Amid these huts some recent work had disclosed part of a large building of stone, of the xixth or xxth dynasty; we were not inclined to incur the expense of moving out the squatters in order to follow it further. At Heliopolis, like most other ancient sites, it would have been easy to clear anything fifty years ago; but the recent land-grabbing for dwelling and cultivation has so reduced the Government property that it is a very costly matter to get space for work. Some ancient houses were cleared in the bare northern land, and the results are stated further on.

A principal object of work was to find the extent of the temple walls, and to ascertain their age. On the north, south, and east of the temenos we found a double wall (see plan). On the west it is complicated by coming against the great city wall; and it is further confused by the walls having been largely dug away by the Khedivial brick-pit, as the ancient bricks provide smooth and uniform earth. This pit is also a nuisance to any one near it, owing to the extent of stagnant water, and filth brought for brick-making, which causes a pestilential smell and breeds great quantities of sand flies and mosquitoes.

3. In one respect the site of Heliopolis is very unusual. Nearly all great and celebrated cities were abundantly occupied in the Roman age, and have a great mass of Graeco-Roman material over the older strata. At Heliopolis, on the contrary, not a scrap of Roman pottery is found, and all the bare surface of the mounds shows nothing later than the xxvith dynasty. Being struck by this I carefully searched all the ground, but could not find anything of a later age. In another direction the same result appears, on searching the banks of rubbish thrown out over the eastern wall; again, nothing after the xxvith dynasty could be found, and much of it was of the dynasties before that. The only conclusion to be drawn is that at the Persian invasion the city was laid waste, and depopulated, on purpose to prevent it being an outwork of Memphis on the eastern road; thus Persia could always approach Memphis directly without any great fortress barring the way. Herodotos alludes to the learning of the Heliopolitans, and to a festival in honour of Ra, but does not refer to any large city or population as at other centres.

4. On the plan, pl. i, will be seen on the east side a gap in the wall and a small dotted square. This square is the sand-bed of the eastern gateway, the stone of which has been entirely removed. It is 276 inches wide. The double wall was traced to the north of the gate; but the inner wall disappeared on the south. The wall has been largely dug out for earth. At the south-east corner it is entirely lost in a modern enclosure. Along the south side it is seen for some way on the outer side, and then appears double with an inner wall. This is obscured by the new metalled road to the Khedive's estate running along the top of the inner wall, on its inner side.

The S.W. corner is entirely lost in new levelling of ground, and the brick-pit. Then a single very thick wall appears along the west, running at an obtuse angle to the western city wall. The city wall is lost in a field, but is seen to north and south of that. How it joined to the thick wall of the temenos could only now be found if a field was taken up for excavation.

The northern part of the city wall here ran up to a stone gateway which still remains at the south end of this piece of wall. The stone face of the gate side is 128 inches wide for the recess of it, the projecting pilasters on each side having been removed (see bottom view, pl. ix). As a city gate would have double valves, this shews that the whole width of the gate was probably 12 cubits, about 20 feet 8 inches, each valve being somewhat under 10 feet 8 inches. Thence the city wall runs north-east for about 1670 feet to the outer face of the north wall, with a thickness of 44 to 48 feet, forming a high bank by the side of the canal. The north wall is double, and can be traced by the bricks having been dug away; it runs at about 114° magnetic, and is lost in houses and enclosures.

Returning to the temenos of the temple, we find it starting along the north from a single western wall which seems to be an inner city wall with buttresses. Along the north it runs double until lost in low ground and fields. At its best parts it is about 17 feet high, almost entirely banked up with ruins of houses and town rubbish. Within the north-west corner is shewn a dotted square, with a wall running across it. This is the reservation of a modern cemetery, which cannot be excavated; the wall across

it is obvious, as it has been stripped of bricks to build the tombs.

To what are we to attribute this curiously doubled wall of the temenos? In the portion shewn on a larger scale (pl. ii) there is a buttress on the north of the southern wall, shewing that the inner wall was independent at one time, and the outer one was added to it. Yet both are nearly of the same age, and that not early, as pottery of the xviiith or xixth dynasty was found beneath the outer wall, and the inner one is founded at about the same level. Looking at the great brick wall of Rameses II around the temenos at Memphis, it seems likely that the inner wall may be due to him, and the outer wall perhaps to Rameses III on the occasion of the threatened invasion from Syria.

Within most of the temenos I have surveyed the field boundaries, as such sometimes shew traces of the former condition of the ground before the cultivation, as, for instance, at Memphis.

CHAPTER II

THE EARLY FORT OF HELIOPOLIS

5. THE middle part of the temenos is occupied with a great enclosure of earth, sand, and bricks, square in form with rounded corners. This was not particularly obvious at first; but by continual searching, and some excavations where possible, I traced it on all sides. The inner and outer sides of the bank are marked with dotted lines.

To begin with, the carriage road to the obelisk runs along the outer edge of this fort. In former times the ground was marshy, and a carriage could not drive over the temple site direct, so the road clung to the higher and firmer line of the fort banks. From the bank line a path led to the obelisk, now converted into a metalled road since the cultivation of the site. Beyond this is a part of the bank left in Government land, and this was the place of our excavations for settling the nature of the bank, which will be discussed later.

After this the bank is entirely enclosed in a private garden occupying all the north-east corner of it. On the inner side the bank still rises steeply 5 or 6 feet from the fields. Along the north side I tried to find it; but the pressure had made the bricks quite indistinguishable from mud, and in the field where I had to fill in my hole again I could trace nothing. But on the open ground toward the north-west corner, by leaving a trench open for two or three weeks to dry, the cracks shewed where the joints of the bricks had been. One course also was of brown between the black bricks. These shewed a width of brick and joint equal to 9·3 inches, or about 18 inches for the length of a brick. The courses with joints averaged 4·8 inches. The bricks at the eastern end were 8·1 wide, 4·3 thick: others 8·7 wide and 7 thick.

Along the western side, the line of bank is marked apparently by a modern path along its inner edge, with a sharp drop into the field. The southern side has a high steep bank along the inside for some way; this bank then curves away into the area, apparently owing to the accumulation of building remains in the south-east corner of the fort.

The relation of the later Ramesside walls to the earlier fort is notable. The inner or earlier wall ran on the top of two sides of the fort, utilising the height and solidity of the bank. The later or outer wall had to run in the lower ground along the outer edge of the fort. The modern divisions of land are dominated by the form of the fort on all sides. On the east and west the road and path follow the banks; on the north the garden enclosure occupies the bank; on the south the modern road runs along the bank. The whole area is divided by two main cross lines into quarters, which are each subdivided differently.

6. Turning now to the mode of construction of this bank, a section through the whole thickness of it is shewn on pl. ii. This section was cut across in the ground between the road to the obelisk and the garden; it had to be taken in two different parts so as not to interfere with access to the garden, but the connection was so close that it is equivalent to a single trench across the bank.

Toward the inner side is the nucleus, or bank first thrown up. This is of mud below, here continuous black. Then a layer of sand, here left white, above which are three alternations of layers of mud and sand. This first bank was about 25 feet wide at the top and 50 feet at the base. How high originally we cannot say, but it is now 14 feet above the present water level (shewn by a waved line at the base); and the water has risen about 13 feet since the bank was thrown up. Probably it was a few feet above water originally, so perhaps about 20 feet would be the original height.

After this roughly piled bank of earth and sand was thrown up, it was faced on the inside with a

coat of bricks, of which a sloping inner face can be traced. This coat was carried over the early bank, raising it probably 5 or 10 feet, as it is still 2½ feet higher than the sand. On the outer side the bank was immensely thickened by brickwork, so that the whole was probably 140 feet wide. It may have been even more, as it is delimited now by a steep fall into the fields, where the edge may have been ploughed away. The outer 20 feet was not sectioned, as a public road ran along it, but it appeared to be a continuous mass. In the 120 feet sectioned the black earth appeared to be uniform; but on leaving it to dry it was possible to trace slight differences of courses, which proved that it was all laid brickwork.

At the top of pl. iii are two views of sections of the bank. The first shews the slope of sand near the top on the inside, with the darker brick over it which is marked with pick cuts. The second view shews the same slope lower down, where it is not so steep, a white band with black mud-brick over it. The words "brick" and "sand" written in, will explain the position.

At the bottom of the brickwork in the water level was found a block of temple sculpture, shown in pl. iii, 3. It represents a king seated, in low relief, like work of the vth dynasty.

7. It should be stated that the account here given of this structure was verified at all points by Mr. Engelbach, with the training of an engineer, and by Mr. Quibell as an archaeologist, and no possible doubt seemed to remain on any point of the description. It is needful to say this because this bank appears to be identical with a structure described by Capt. Weill in the *Sphinx*, as having been excavated by Prof. Schiaparelli. There it is stated to consist of a series of concentric galleries of brick, in a chamber adjoining which was found a mass of fragments of iiird-dynasty sculpture. No trace of original galleries could be found by me; but the workmen in the previous work, and also in my own work, readily cut galleries in solid brickwork, when searching in it. As there seemed a hopeless divergence in the understanding of the two excavations, I sent to Prof. Schiaparelli a copy of my section, and plan of the position, asking if it was the ground examined by him; in the three years that have elapsed I have not had any reply. My own conclusion is that the fragments of sculpture had been thrown in with the earth and sand of the bank, like the block of sculpture which I found; and that the galleries seen had been dug by the workmen when excavating, just as was done by my own workmen.

8. An important question is the relation of this great square bank enclosure to the obelisk and the outer wall. The eastern gate axis, if square with the east wall, runs to 60 feet south of the obelisk; but the wall may have been a little askew, and the difference is only 2½° between the line to the obelisk and the square with the wall. In any case the Ramesside axis recognised the obelisk as being a central object, or close to an axial roadway. The axis therefore was the same from the xiith to the xixth dynasty. What happens where the axis cuts the bank is therefore to be closely examined. I sank a wide pit through the bank in the axis of the obelisk, and found the original solid mud-brick and sand-bank complete to the top, which is there 131 inches above the base of the obelisk. I sank another pit 12 feet south of this, and found the same condition, cutting the early sand-bank. Further south I could not work owing to the public road. If the obelisk were one of a pair on either side of an entrance, a distance of 12 feet from it should certainly have touched any roadway leading up to that entrance. It appears then that there was no opening in the banks of the part along the roadway which existed from the xiith dynasty onward.

9. If we look for some comparison with this curious earth fort, we find a similar structure, only eleven miles to the north of this, at Tell el Yehudiyeh. The earthen fortress there is of piled sand faced with brickwork as at Heliopolis. The sizes of the two forts are identical, within their variations of different parts. The forms, square with rounded corners, are exactly the same. The absence of any entrance in the line of road is also the same. The only difference is that the fort at Yehudiyeh is more elaborate, having a smooth slope of stucco outside, and a stone facing wall subsequently added in front of that. The age of the Yehudiyeh fort appears on all grounds to be that of the Hyksos. At Heliopolis the fort is later than the destruction of Old Kingdom sculptures, but before the xixth dynasty. It must belong therefore to the viith–xth dynasties or to the Hyksos. We seem thus to be limited to the conclusion that the fort of Heliopolis is a Hyksos fortress like that of Yehudiyeh. This opens our eyes to the possibility of finding other Hyksos fortresses. I have seen in the Delta, and also in middle Egypt, great walled enclosures without any original entrance, and I hope some day to examine these effectively.

CHAPTER III

THE OBELISK OF TAHUTMES III

10. THE serious excavation, which we started as soon as the consent for it was obtained, was on half of a field south-east of the standing obelisk of Senusert I. This space we cleared by baling the water down to clean native sand, at about 6 to 7 feet lower than the xiith dynasty base of the obelisk. The ground was then filled in again for cultivation.

The principal result was finding some two dozen blocks of another red granite obelisk, which was first inscribed down the middle of the sides by Tahutmes III, and then had collateral inscriptions added by Ramessu II. Copies of these blocks are all given on pls. iv and v; they may have belonged to more than one obelisk. From the block 3, with the *ka* name at the top, it appears that the obelisk was 64·4 inches wide at that part. The Senusert obelisk is at its base 74·0 inches wide on N., 74·4 on S., 76·2 on E., 75·8 on W., being nearly 2 inches larger one way than the other. Thus the destroyed obelisk may well have been a pair with the existing obelisk, as the difference of the top measure of one and the base of the other is about the usual amount of taper.

11. Pl. iv, block 1. This is a very rare scene of the royal falcon on the *ka* name, with human arms, offering light or incense to a seated divinity. The *ka* name is that of Tahutmes III, as on the Constantinople obelisk, *hez qa mery Ra*.

Block 2. This is the corner edge of the pyramidion, the sides are marked here A and B. The angle of the vertical of the hieroglyphs on A with the face B is $72\frac{1}{2}°$, the converse angle on B is $74\frac{1}{2}°$. This is the angle on the face, corresponding to $71°37'$ and $73°54'$ angle of rise. As the breadth at the base of the *ka* names was 64·4 inches, it seems that the intended breadth of the top was 3 cubits, 62 inches. If the height of the pyramidion was 5 cubits, that would have an angle of $73°18'$, which agrees well with these measures, as on the B face the angle is much better fixed than it is on the other face.

Block 3A gives the *ka* names on two adjoining faces of the obelisk. At the left on 3 is a portion of the same name as that on the right, 3A, (*kha*) *em măot*, a name of Tahutmes III. This was the middle column of each face. The two side columns of inscription contain *Să Khepra* and *Să Amen*, names of Ramessu II. It should be noted that where names of gods occur the connection is always *mery* (beloved) by Tahutmes and *să* (son) by Ramessu. The pattern of panelling differs in the two periods, as seen by the head line; and the block 3B gives the details of the two styles, the earlier having much wider grooves, and three rows of top rectangles instead of two.

Block 4 is a fragment of the titles above a cartouche (*nesut bat neb taui*).

Block 5 is a scrap of a cartouche which seems inexplicable, the angular object below the Ra not being identified.

Block 6 is part of a cartouche in the same style, with *men*, probably of Men-kheper-ra, Tahutmes III.

Block 7 is splendidly cut, having deep and finely hollowed signs polished in curves. The *kheper* has a straight base of a sign over it, which might be *kha* (Senusert II) or *men* (Tahutmes III).

Block 8 has part of a standing figure with a staff, and the edge of a cartouche with a name ending in a plural, and hollows which can hardly be anything but the legs of a *kheper*. This must be of Amenhotep II or Tahutmes IV.

Block 9 has part of the title *neb taui* from over a cartouche. Before that are apparently the owl, sceptre, and arm signs.

Block 10 is part of the usual cartouche of Ramessu II. It is $25\frac{1}{2}$ inches wide, which shews that the later inscription spread over a full third of the face of the obelisk. Probably the original middle column continued uniform down from the top, and so the greater width below left room for Ramesside expansiveness.

Block 11 with the bottom corner of the cartouche, may have belonged to 10. The *neb* sign on it is of good work, though cut to two inches deep; it looks as if it belonged to Tahutmes III.

Block 12 is an edge of the obelisk, and therefore bearing names of Ramessu. The cartouches are only 17 inches wide, and the axis only 12 from the edge, and therefore not overcrowding like No. 10. The owl on the left must have belonged to Tahutmes; it implies a breadth of the obelisk of about 66 inches, which would be quite likely if high up near the *ka* names, where it is 64 wide.

12. Plate v, block 13. This is a splendidly cut figure of Ra, highly polished in the hollows, and with minute detail around the eye.

Block 14. The signs are finely cut, deep and square in the sides.

Blocks 15, 16, fragments of the signs *h* and *nefer*.

Block 17 is coarsely cut with sloping sides to the signs, probably Ramesside.

Block 18 belongs to a figure which must have been about 11 feet high, and therefore probably from a wall scene.

Block 19 is a corner of the obelisk with added cartouches. As they end in plurals, and we have seen in 8 a piece of Amenhotep II or Tahutmes IV, these probably belong to the same king.

Thus some additions to the work of Tahutmes III were made before Ramessu.

Block 20 is another edge block, and from the coarse cutting with very sloping sides it is probably of Ramessu II.

Blocks 21 and 22 are also probably Ramesside.

Block 23 is of light-coloured granite with shallow cutting, found about 75 metres east of the obelisk, and probably from a temple wall.

Block 24 is a puzzling fragment, finely cut with deep hollows, well finished. The grooves are all sunk; they do not suggest any usual subject.

Block 25 is part of a town sign, with an edge of a very large circular curve below.

Block 26 is another puzzle. The little raised patch in the upper hollow space seems as if it were a vacant space shewing through below a seated figure.

Blocks 27, 28, 29 are certainly not from the obelisk, but parts of wall scenes. 27 is of quartzite. 28 is of limestone, apparently the word of a place name . . . *omk*. 29 is of red granite much weathered.

13. Of the Ramesside period may be noticed a brick building by the east gate of the temenos. The north side of this has been ploughed over in a field. The south side is 966 inches (80½ feet) wide; being 450 west of the doorway, doorway 117 wide, wall 399 east of doorway. The wall is 145 thick on the south, 152 on west, 209 on east; leaving an inner width of 605 inches. The stone facings of the doorway are shewn in pl. iii, 4. This building was not important like a temple, as the walls were all of mud brick, with only limestone facings for the door. It was not part of a great building, as it could not be over 80 feet long without blocking the axis. It was not intended as a store, as the width of the doorway—10 feet—would be a weak point. From the position close to one side of the entrance it was probably the guard-room, with a wide gate at each end for bodies of the guards to march in and out. As no outer wall is known on this side beyond that of the temenos, it is probable that the temenos was one with the city wall here, hence the guard was that of the city as well as of the temple.

14. Pl. vi. Among the many fragments found in the field by the obelisk there were three heads of statues. Fig. 1 is a good work of the xviiith dynasty, unfortunately much battered. It is in a black hornblendic rock, with bronze lustre on crystalline faces. Fig. 2 is part of a noble head in green serpentine rock, apparently of the earlier part of the xviiith dynasty. Fig. 3 is an elaborate sculpture in green basalt (so-called) of the xxvith dynasty. These shew how severe has been the destruction of the statues here, in contrast to the slight injury that they have suffered at Memphis.

CHAPTER IV

LATER REMAINS AT HELIOPOLIS

15. Pl. vii. A portion of a scene in a funerary chapel was found re-used for building material near the western end of the temenos; for a photograph see pl. viii, 4. The tomb was for a purifier, reciter, divine father, purifier of the hands in the temple of Ra, Atmu-hotep, and his wife T(?)a-sepi. The scene above wáś of the deceased and his wife adoring Ptah. Below is the mummy being held by Anpu before the pyramid-tomb; in front of it is the priest offering incense and drink, the reciter, and then the wailing women.

Below is a fragment of a tablet which represents offerings to the god of Kharu (Syria) and of Egypt. Also a scrap of an ear tablet.

The plan of a house belongs to about the xxiiird dynasty; it stood north of the temenos near the western wall of the town, buried about 8 feet deep in rubbish. A view of it is given on pl. ix, 22. In a cellar below the north-west room were found the small objects shewn at the base of pl. ii. These are (1) a figure of the god Mahes, (2, 3) two scarabs, (4) a hawk, (5) a double-eye amulet, (6) an *uzat* eye, (7) another very rude, (8) a very rough figure of a bird or seated sphinx; with these was (9) a beautifully wrought duck-head handle of an alabaster bowl, and (10) a scrap of a bronze bowl with two loops for a handle. In the same house were the cup and tall jar drawn in pl. x, 10, 11.

Pl. ii. Of other small objects there is (11) a scarab read "Loved by Sebak the lord"; the spelling with *a* in the name is peculiar, and is found in Sebak-Ra lord of Pa-anekh (BRUGSCH, *Dict. Geog.* 319). Fig. 12 is a scarab of Psemtek-sa(?)-neit, who

seems to have been an archer of a sacred corps. Figs. 13, 14 are small glazed amulets, found near the obelisk. Fig. 15 is a household amulet of Horus on the crocodiles, which is at least clearly cut though not more intelligible than usual.

16. Pl. viii. Fig. 1 is a large scarab of Amenhotep III, "equipping, or preparing, Egypt." 2 is a scrap of the characteristic work of Akhenaten. 3 is a fragment of Sety I. 4 has been described above. 5 is a glazed tile of Sety II for wall inlay. 6 is part of a stele of Ramessu II dedicating an obelisk to Horus, lord of heaven, prince of Heliopolis. 7 is a fragment of Ramessu V. 8 is a fragment of Ramessu să Atmu, which may be the Ramessu mery Atmu of the list of sons of Ramessu III at Medinet Habu; this would agree with the report by Brugsch of seeing his name on a block at Heliopolis. 9 is a piece of a large alabaster vase of the princess Thes-bast-peru, daughter of Usarkon II. 10 is a fragment of Sheshenq III. 11, a scrap of a cartouche of Apries. 12, the lower part of a statue in green serpentine naming "Nekht-hor-heb, beloved of Hor-akhet-taui."

This group of fragments with kings' names shews how largely royal gifts were made to the temple; as an interesting variety of names they were presented together to the Glasgow Museum. Fig. 13 is a glazed pottery ring with a chamaeleon on it, the only such that I know. Fig. 14 is the handle drawn in ii, 9. Fig. 15 is a quadruple *uzat* eye with papyrus plants between (see *Amulets*, 140*g*). Fig. 16 is a pottery dish with central dish fixed in it (see section in pl. x, 3). 17 is a limestone dish with central boss.

Pl. ix. Fig. 18 is a hand from a statue holding a globular vase. 19 is a slab from a tomb representing a man named Sary, and his wife the singer of Amen, Thiy, offering to his father, the royal scribe, keeper of the palace of the king, keeper of the granaries, Kha-em-uas.

Figs. 20, 21 are pieces of delicate work, of about the xxvith dynasty. 22 is the house already described under pl. vii. 23, 24 are two solid modelled pottery heads; they are of the same class as the solid pottery heads of the foreigners found at Memphis. They are thus of some value as dating such heads, since there were practically no manufactures going on at Heliopolis after the Persian invasion, and so these heads are probably of the vith century B.C.

Fig. 25 is the wall of the great western gate of the city, 128 inches long, without either of the reveals of the ends, which have been removed. The position is shewn on the plan pl. ii, where the counter-wall is dotted, as it has been removed, along with all the southern part of the city wall.

17. Pls. x, xi. Pottery was found in considerable quantity during the excavations among the town ruins. It is of some value for dating types, owing to the close of the history of the town at the end of the xxvith dynasty. What is here drawn may be dated from the xixth to the xxvith dynasty.

Figs. 1 and 2 are of the hard drab ware common at Naukratis. 10 and 11 were found together in the house, pl. vii, and ix, 22. The large jars, 14, 15, are probably about the xxth dynasty. Fig. 16 may be of the xixth dynasty. Figs. 18 to 30 were all found together in one group by a long wall below the modern village. The type of 20, 21 recalls the forms of the late xviiith and xixth dynasties (*Illahun*, xix, 4; xx, 13); probably the whole group might be dated to the xxth dynasty. Fig. 34 is probably xxiind dynasty. 43 is a regular Greek form of the early xxvith dynasty, black pottery with cylindrical handles. 44 is a slightly later form in buff pottery. 45 to 48 are well-known types of the xxvth and xxvith dynasties. 50 is probably about xxth to xxiind dynasty. The brazier 51 and the pottery table 53 are both unusual types.

If ever the Egyptian Government removes the obstructions which it has made by the new law, and permits excavations on the deep temple sites as before, I much hope to continue excavations at Heliopolis, where there is promise of good results if extensive and costly work is undertaken. In any case we now have an outline of the temenos and its walls, and have recovered the remarkable earthen fort which appears to have been made by the Hyksos.

KAFR AMMAR

BY ERNEST MACKAY

CHAPTER V

IIIRD TO VITH DYNASTY BURIALS

18. THE majority of the graves dealt with in this chapter were found in a series of knolls close to the edge of the cultivation, and immediately opposite the village and railway station of Kafr Ammar in Upper Egypt. Owing to the extreme poverty of the burials, as regards pottery and other objects, practically all the graves were found to be untouched by plunderers in either ancient or modern times, and we were, therefore, so fortunate as to find a long series of undisturbed burials which form valuable material for purposes of study.

As few of the graves contained pottery or other dateable material, it is difficult to date the majority of them more closely than as Old Kingdom, *i.e.* from the iiird to the end of the vth or the beginning of the vith dynasty. In no. 479 in the Kafr Ammar cemetery, a head-rest was found with a black polished jar (*Tarkhan I*, lviii, 93 *p*) which is of the same form, though perhaps not of the same technique, as one figured in *Mahasna and Bêt Khallaf* (pl. xii, K 2), and dated there as belonging to the vth–xith dynasties.

Most graves of the vith dynasty can be characterised by the forms of the pottery buried in them, but in only two graves were objects found that might be dated as late as the vith dynasty. These were a small alabaster jar found re-used in a Ptolemaic grave, and a button-seal found with a body in grave 28 (pl. xiv). Failing thus any direct evidence in favour of the vith dynasty, with the exception of these two objects, it is probable that few, if any, of the graves are later than the close of the vth dynasty.

The almost total absence of offering jars or other objects has always been a feature in the smaller tombs of the period between the iiird and the vth dynasties. Pottery is extremely common in the ist dynasty, one or two jars being placed with even the poorest burial. With each succeeding dynasty, however, the use of pottery for burial purposes seems steadily to diminish, until it almost became the rule not to place anything in the grave for the use of the dead. This state of things continued to the end of the vth dynasty, when pottery again began to come into use, and finally, in the vith dynasty, numerous pieces are found in even the poorest graves.

19. For purposes of cataloguing and description the burials fall into four classes, as follows:

Class A. Plain burials.
„ B. Burials contained in basket coffins.
„ C. „ „ „ short wooden box-coffins.
„ D. „ „ „ long wooden coffins.

The graves found in the Kafr Ammar cemetery dating from the iiird to the vth dynasty were 107 in number, 44 burials being male, 40 female, and 11 child or infant burials. Fourteen bodies were not sexed owing to there being a doubt about them. Twelve graves only had been disturbed, leaving a remainder of 95 untouched burials.

20. The bodies were placed in a semi-contracted or contracted position, and always on the left side, with one exception (no. 232), in which the body was found lying on the right side. The orientation was nearly, though not quite, as constant. Ninety-two bodies were placed with their heads to the north, north-east, or north-west, three with their heads to the south (nos. 232, 286 and 521), four to the east or north-east (nos. 14, 51, 245 and 537A), and three to the west (nos. 468, 505 and 537B).

21. Practically all the bodies were wrapped in linen shrouds, heavy pads of cloth being placed at the bottom of the coffin to form a kind of mattress.

Cloth was also frequently laid on the body as a coverlet. In three graves (nos. 231, 246 and 522) the body was surrounded and packed in by masses of coarse linen, presumably to keep it from shifting when the coffin was being lowered into the shaft. In no. 462, which contained a reed coffin, two large pieces of linen, unusually well preserved, were found on the lid of the coffin at the southern end. Two accordion-pleated linen garments were found in no. 516 and one in no. 535, but these were in too decayed a state to permit of their being examined properly. Two shrouds found upon the body in no. 221 were in a good state of preservation. The one nearest the body measured 7 feet 3 inches long by 3 feet 6½ inches wide, and was sewn down the middle; one side had a fringe sewn on, the other side being left untrimmed. The outer shroud was 20 feet long by 3 feet 6 inches wide, and was made of one piece of cloth with a fringe down one side of it.

Two very elaborately bandaged bodies were found in nos. 468 and 532; as they were in wooden box-coffins, they must be of an early date. The method employed in the first-mentioned burial was to enclose the contracted body in a shroud of coarse linen, the head being distinguished from the body by a piece of linen rope tightly drawn round the neck. Three narrow strips of linen were then tied round the body a little distance from one another, and knotted at the sides, while three more ran lengthwise as far as the neck, when they were twisted round. All the straps interlaced one with another. The limbs of the body could not be distinguished when wrapped up, as the thighs and shins were tightly bound against the trunk. The arms were similarly contracted, the palms of the hands being placed against the breast. The burial in no. 532 was not quite so elaborately bound, but similar care was taken to maintain the contracted posture. Small cords of twisted linen tied the legs to the body, but the arms were straight and bound close to the sides of the trunk.

CHAPTER VI

OBJECTS IN THE GRAVES

22. *Head-rests.* Twenty-eight graves contained wooden head-rests, the greater number of which were found beneath the heads of the burials. In four cases (nos. 532, 537A, 558 and 570), bricks or stones were placed beneath the head in place of a proper head-rest. These head-rests are dealt with in chap. x.

23. *Beads and Amulets.* Placed with the bodies in nos. 247, 482 and 558 were small blue glazed beads. A number of these formed a bracelet and were found close to the left wrist of a small child in no. 247, accompanied by a thin horn bangle. The beads in nos. 482 and 558 were evidently used for necklaces, as they were picked up close to the necks of the burials. The two latter graves contained female bodies. A barrel-shaped carnelian bead was found at the neck of a young woman in no. 516.

The body in no. 559 had an ornament at the neck in the shape of a small round plaque made of rough blue-green glaze with an eye in relief on one side of it. Three thin bracelets made of a substance resembling wood were taken from the left wrist of the body in no. 557.

The button-seal, mentioned in the early part of the last chapter and figured in pl. xiv, was found with an adult male body in a box-coffin. It was the only example found at Kafr Ammar.

24. *Sandals.* In two tombs (nos. 56 and 133) (pl. xiv), were found four wooden sandals, a pair in each tomb. They were made of thin wood and slightly grained to resemble leather. At the point of each was cut a small hole to take a cord which passed between the big and the second toes. Two other holes were cut at the heel to take the lashings which passed over the instep. Similar sandals were found in the vth dynasty cemetery at Deshasheh.

Mirrors. Only two mirrors (pl. xiv) were found (nos. 14 and 56), a fact which is not surprising as they seem to have been seldom placed with the dead before the vith dynasty.

In No. 518 a ball was discovered, made of linen and tied round in many places with palm-fibre (*Tarkhan I*, x, 8). The grave was that of a young woman with a child lying by her side, to whom the plaything evidently belonged.

No. 479 was exceptional because it contained five wooden hoes, a head-rest of the branching type, a jar (*Tarkhan I*, lviii, 93*p*), and a small basket.

A fine diorite offering-table was taken from no. 555, the burial of which had unfortunately been entirely removed.

25. *Pottery.* The references by numbered types are to the series of pottery in *Tarkhan I*, pls. xlvi to lviii. Pottery was only found in seven graves (nos. 238, 475, 479, 522, 532, 545 and 654). No. 238 contained four jars and a red polished dish, these being found in the filling of the shaft (68 *h, j, l*, 37 *l*). Two of the jars were of the same type as no. 68 *l*.

All the jars are similar to those dated to the late iiird or ivth dynasty at Meydum, and the same dating is also given in Garstang's *Mahasna*, pl. xxxi.

Nos. 475 and 654 each held five pieces of pottery, which were used in lieu of bricks or stones to seal up the entrance to the recess. These were all of 68 *l*, as in 238. Fragments of a jar were found at the bottom of the shaft in no. 545, also similar to one of these in no. 238 (68 *l*). No. 532 contained a very roughly made pottery cup (xxvii, 4). This form was also found at Mahasna (pl. xlii, no. 300). Two pieces of pottery, which are difficult to date exactly, are shewn in nos. 39 *j*, 93 *p*. The first, taken from no. 522, is a red polished dish of the Meydum type, but differing from it slightly in having a flattened base. Otherwise, it is practically of the same form as no. 44 in *Meydum and Memphis III*, pl. xxvi. The second, a black polished jar from no. 479, is shewn in no. 93 *p*, and was the only one of its kind found in the cemetery. A form somewhat similar was found at Mahasna, pl. xli, K 2, and was ascribed to the period between the vth and the xith dynasties.

Alabaster. The references are to the series in *Tarkhan I*, pls. xxxii to xliv. Alabaster vessels were found only in two graves. In no. 238 two small cylinder-jars were found (61 *h*), together with an alabaster bowl (42 *g*), in the north-west of the chamber between the wall and the wooden box-coffin that contained the burial. Two flat shells containing traces of malachite were also found in one of the vessels. No. 240 contained three alabaster jars, two being of cylindrical form (61 *h*, 62 *k*), and one cup-shaped (42 *d*). These were placed at the south end of the recess, just outside the wooden box-coffin, which was badly decayed. The burials in both coffins were in a very contracted position.

[I question whether both 238 and 240 do not belong to the iind dynasty.—W. M. F. P.]

26. In nos. 209, 246, 426, 473, 480, 506 and 522 a long wooden walking staff was placed alongside the body. Each perfect staff shews signs of wear at its thicker end, indicating that it was in use before the burial and not merely provided for the occasion. All the sticks with the exception of that found in no. 426 were found with male bodies. It would also appear from the evidence obtained in the Tarkhan cemetery that sticks were only used for walking purposes, as all the examples secured were found with old or middle-aged people. The greater number of the staves were in too bad a state to be properly measured, but three were fairly perfect, and their lengths were: no. 209, 53½ inches; no. 480, 58½ inches; no. 426, 62¼ inches (*Tarkhan I*, viii, 5). They were all fairly straight pieces of wood with the bark still remaining, and appear to be made of a species of birch. They were doubtless imported from Syria, as is the case with different species at the present day.

No cases were found of injuries or broken bones, only one abnormal feature in a body being observed. This was in no. 547, in which the lower vertebrae of the spine in the male body were ossified together, and one side of the pelvis was joined to the sacrum. With the bones in no. 227, which belonged to a woman, a quantity of chopped straw and mud was found that, from its position, must have been placed in the stomach. This was the only case noted of a foreign substance being put inside a body, presumably for preservative purposes.

In all the graves cleared, only the bones were preserved; some of these were almost as strong as if they were recent. Eight graves (nos. 209, 233, 255, 425, 482, 528, 551 and 558) had remains of hair still adhering to the skull. The colour was either dark brown or black. The hair in no. 551 was exceptionally well preserved, dark brown in colour, and with the ends terminating in a close curl. All the skulls that would bear moving were brought to London, and are dealt with by Dr. Derry in chap. xvii.

CHAPTER VII

TYPES OF GRAVES

27. THERE were four types of graves in this cemetery: (1) rough irregular holes, (2) square shafts, (3) rectangular shafts, (4) staircase tombs.

1. Rough holes were found in eleven instances (nos. 207, 235, 432, 469, 470, 472, 506, 507, 546, 650, 651). They consist merely of a hollow roughly cut in the ground, sufficiently large to enclose a body. The holes were quite shallow; in nos. 207 and 235 the burial lay only a foot below the surface of the ground. The remainder were dug in sand and had brick superstructures above them.

2. Square shafts were very common at Tarkhan, thirty-seven examples having been found. The bodies were placed either at the bottom of the shaft or in a small recess cut in the side, except when the pit was used for more than one burial. Of the thirty-four recessed shafts, twenty-nine had the recess on

the western side, three (nos. 51, 468 and 505) on the north, one (no. 14) on the south, and one (no. 231) on the east. The shafts varied from 2 to 16 feet in depth, and from 32 to 68 inches in width. In some cases a shaft was slightly longer than its breadth; when this difference exceeds 2 inches, the shaft is included in the next division.

3. Rectangular shafts are the commonest type at Tarkhan, fifty-four having been excavated. The dimensions vary from 35 to 124 inches, by 14 to 60 inches. As in the square shafts, the bodies were laid either at the bottom of the pit or in a rough chamber. Of the twenty-eight recessed shafts, twenty-five had the recess on the west, two (nos. 537A and 537B) on the north, and one (no. 475) on the south.

All the chambers were roughly cut in the wall of the shaft, and were just large enough to accommodate the body. When a coffin or basket was longer than the side of a shaft, one or both ends of the recess were extended into the rock north and south of the pit (pl. xii, nos. 2 and 12). The recesses, together with the shafts, were cut out of the rock with chisels or picks, the edge of the largest sized chisel used not exceeding ½ inch in breadth. In some shafts a copper or bronze implement was employed for this purpose, as in some of the pits hard nodules of flint in the midst of the softer marl shew green markings left by the tool. In nos. 233 and 485 wooden tools were employed in excavating the pits (*Tarkhan I*, x, 5), one being found in the recess of the first grave, and two in that of the latter. All three of these tools have the butt end slightly bruised through a mallet being employed with them. The tool in no. 233 and one of those in no. 485 were picks, the third tool being a chisel. The marks left in the sides of the shafts shewed that these tools had been used in the excavating. The recess was as a rule left open, and therefore became filled with gravel and sand when the shaft was filled in. In some graves (nos. 216, 225, 236, 248, 254, 468, 471, 537A, 539, 543 and 547), the recess was carefully blocked up with bricks or stones cemented together with mud mortar. A good example of such a sealing may be seen in *Tarkhan*, pl. xxv, which shews no. 216, as it was found and also when opened.

The sizes of the bricks are in three groups, A, B, C, averaging

A	. . . .	10·2 × 4·8 × 3·2 inches
B	. . . .	11·6 × 5·7 × 3·5 „
C	. . . .	12·7 × 6·2 × 3·6 „

As they are commonly mixed together in a single tomb, it is clear that they were used at the same time.

The recesses in nos. 475 and 654 were blocked by a row of five jars placed on their mouths. These jars were filled with mud, and were of the same type as those found in no. 238 (pottery no. 68 *l*).

In three graves (nos. 231, 232 and 485) the top of the shaft was lined to prevent its falling in. No. 231 was lined with mud, no. 232 with mud and stones, and no. 485 with bricks. The bottom also of no. 485 was lined with bricks to support a soft stratum of rock into which the shaft had penetrated.

28. *Superstructures.* Remains of superstructures were found above eight graves (nos. 432, 469, 470, 472, 506, 507, 546 and 554). All these graves were found in the sand at the foot of the knolls in the cemetery. The superstructures were of two kinds, (1) constructed entirely of brick and mud (nos. 432 506, 507, 546 and 554), (2) a mound of rubble cased in with bricks (nos. 469 and 470, see *Tarkhan I*, xxiii). Despite the sand that covered them, they were all badly denuded, and it was found impossible to make out their original forms. It is very possible that the pit-tombs situated at the top and in the sides of the knolls were also at one time provided with similar structures, but that owing to their elevation these superstructures have been entirely denuded away. [Such structures were found in the next year, *Tarkhan II*, p. 2.] The superstructure over no. 546 was the best preserved and consisted of a brick mound 70 inches long, north to south, 57 inches wide, east to west, and 2 feet high. The shape was oval, the upper part being greatly rounded owing to weathering. It covered a rough hole measuring 4 feet long × 22 inches wide × 35 inches deep, which contained a contracted body. The hole was lined on the north, east, and western sides with loose bricks placed lengthways. The actual space for the body inside these bricks measured 40 × 14 inches. A depth of 17 inches of sand covered the superstructure. No. 469 contained a body placed just below the surface of the ground, and a rounded structure of brick 51 inches across and 21 inches high was built above. This superstructure was composed of a round brick wall 15 inches thick, the space inside which was filled with coarse gravel, a few bricks being placed on the top. The whole was then plastered over with a thick coating of mud. The superstructure over no. 472 merely consisted of a mound of gravel with a few bricks placed loosely on the top. Bricks of four sizes were used in the construction of these superstructures,

averaging respectively 11·1 inches × 5·3 × 3·2; 11·5 inches × 5·3 × 3·1; 12·0 inches × 5·7 × 3·3; and 12·4 inches × 5·6 × 3·6.

CHAPTER VIII

NOTES ON THE REGISTER: PLS. XVI, XVII

IN the following descriptions the graves are classified, while the whole are put in order of numbers in the register.

29. Class A. PLAIN BURIALS.

Twenty-three of the graves in this cemetery contained bodies placed either at the bottom of the shaft or in a recess, but not enclosed in any kind of coffin, whether of wood or basket-work. Three graves (nos. 225, 518 and 555) had been disturbed, the position of the bodies could not therefore be determined; the remainder were untouched, and the position was invariably contracted and laid on the left side. The head was as a rule to the north, with the exception of two (nos. 14 and 537A) which were to the east, one (no. 232) to the south, one (no. 432) to the north-west, and one (no. 537B) to the west.

There were ten male, eight female, and two child burials in the graves of this class. The bodies in nos. 225, 355 and 537C were not sexed. Two bodies (nos. 336 and 546) had head-rests placed with them; no. 558 had a brick placed beneath the head, and no. 537A a large stone.

No. 14. At the knees was a copper mirror, about 6 inches in diameter, covered with matting.

No. 47. The recess was sealed up with bricks, measuring 12 × 6 × 3 inches.

No. 106. A mat was found above and beneath the body.

No. 210. The body had the arms crossed over the breast.

No. 225 (pl. xii, no. 7). The recess contained the bones of three bodies jumbled together. Disturbed.

No. 232. The shaft was lined with stones and mud 24 inches from the top. One leg of the body was drawn up to the breast, the other was at right angles to the body. A thick pad of linen was under the body. At the north end of the recess was a short length of reed tied at one end with a piece of palm-fibre rope (*Tarkhan I*, x, 9).

No. 236. The head-rest, which was badly decayed, was beneath the head. A long stick lay beside the body on the east side. The recess was closed by bricks of three sizes.

No. 425 (pl. xii, no. 4). A long cloth was placed below the body and folded over it. Brown hair still adhered to the skull.

No. 432. Bricks were laid end to end round the body, forming a sort of brick coffin; the actual space inside these bricks was 30 inches long × 15 inches wide × 14 inches deep. Loose bricks were lying on the body. A superstructure of bricks plastered with mud covered the grave.

No. 469. The circular superstructure of brick above the burial was 51 inches in diameter × 21 inches high; the thickness of the wall was 15 inches, the space inside being filled with rubble.

No. 470. A few loose bricks were placed above the body to form a kind of arch before the gravel was thrown in. Traces of linen were found among the bones. The superstructure above the grave was an oval wall of brick 16 inches thick, filled in with gravel and plastered with mud.

No. 471. The recess was blocked with loose bricks of two sizes.

No. 472. A slight mound of gravel was left above the grave, and on it were placed a few loose bricks.

No. 518. A ball made of a tight mass of linen tied round with fibre string was found on the bones (*Tarkhan I*, x, 8).

No. 528. The skull had long black hair adhering to it. The recess was blocked with bricks laid loosely one upon another.

No. 537. A. A large stone was under the head; the body was wrapped in a long linen shroud. The recess was blocked with stones and mud.

C. Traces of linen were found among the bones.

No. 546. On the north, east, and west of the body bricks were arranged to form a kind of coffin. The space inside the bricks measured 40 inches × 14 inches. The pillar of a head-rest was beneath the head. Traces of linen were found. The superstructure measured 70 inches N. to S., × 57 inches E. to W., × 24 inches high. It was oval in shape, the upper surface being much rounded by weathering. The top of the superstructure was 17 inches below the surface of the ground.

No. 547 (pl. xii, no. 3). Traces of linen were found with the bones. The recess was blocked with bricks of two sizes, made with *tibn* (chopped straw).

No. 551. Long dark brown hair curling at the ends still adhered to the skull. Three large pieces of charcoal were found to the north of the head.

No. 555. Disturbed and no trace of the body

could be found. A diorite offering-table of the usual form was in the south-east corner of the recess.

No. 558. A brick was below the head. The body was wrapped in a linen garment. Brown hair, about 3 inches long, adhered to the skull. A quantity of blue-glazed beads were found close to the neck. In the filling of the shaft was found a short piece of wood, one end of which terminated in a hook, and a long piece of fibre-rope was tied to the other end. This shadoof hook (?) is figured in *Tarkhan I*, x, 6, with one found in a ist dynasty grave.

30. Class B. BURIALS IN BASKET-COFFINS.

The basket-coffins, of which sixteen were found in the cemetery of Tarkhan, were constructed of (*a*) 6 of reeds, (*b*) 2 of twigs, (*c*) 3 of papyrus, (*d*) 1 of fibre, (*e*) 1 of rushes; also 1 of twigs and papyrus, 1 of twigs and reeds, and 1 of reeds and papyrus. One body was wrapped in a reed mat.

(*a*) The reed-coffins were made by placing a number of reed-stems in parallel rows, each stem being united to its fellows by a simple weave of thin palm-fibre rope at regular intervals (see *Tarkhan I*, xxv, 207). Two cords were used together, each crossing over two reeds, under two, and again over two, and so on, passing one another between the stems. The sides and ends of the coffin were formed by bending at right angles the long and narrow mat thus formed, the framework only requiring to be fastened together at one corner. The bottom of a reed-coffin was put on separately and lashed to the framework by cord. The lid was made in the same way, but not attached to the coffin. Occasionally the upper edges of a coffin were finished by binding with fibre.

(*b*) The method of making the twig baskets was more complex (see *Tarkhan I*, xxvi, 529). The twigs were first made into a long rope with the aid of fibre string. One end of the rope was formed into a square (the shape of the basket about to be made), and the rope was then coiled round and round, each coil being laid on the top of the one below, to which it was fastened by frequent lashings of twigs taken from the rope, the lashings being about 4 inches apart. The bottom of the basket was made separately by binding a similar rope backwards and forwards, so that the successive lengths lay side by side. The framework of the basket was then lashed to the bottom with twigs. The lid was made in the same way as the bottom, and, like the lids of the reed-coffins, was not fastened down in any way.

(*c*) The sides and ends of the papyrus baskets were made separately, in the same way as the lids and bottoms of the twig baskets; they were lashed together at the corners. The bottom was similarly made and lashed to the framework. In these baskets also the lid was not attached to the framework in any way.

(*d*) Only one fibre basket was found, and this was too well made to have been provided expressly for burial purposes. It was constructed by coiling a thin fibre rope, in the same way as in the twig baskets. The bottom, however, was made in one piece with the sides, the rope was coiled at first in a flat spiral to form the bottom, and when the right size was reached the coils were continued upwards for the sides. Each coil was lashed to the preceding one at frequent intervals. The upper edge of the basket was neatly finished by an overcasting of fibre. The lid was made of spiral coils, and was not fastened down.

The bodies found in basket-coffins were, with three exceptions, nos. 341, 505 and 521, buried lying on the left side, with the head to the north, and contracted fully or partially.

All the graves in this class, with the exception of no. 506, were undisturbed. In nos. 341, 475, 529, 549 and 654 the bones were two fragile to admit of handling, and they are therefore not sexed.

207. Rough hole (*Tarkhan I*, xxv, 207). The cover of the coffin was fastened down by a fibre rope, the ends of which were tied in a "granny" knot. The head-rest was found close to the head.

235. Rough hole. The basket-coffin was crushed, therefore the depth could not be measured. The head-rest was found beneath the head.

244. The body was wrapped in linen. Though an undisturbed burial, the lower limbs were missing.

254. The recess was closed by a mass of small stones and pieces of brick, plastered over with mud. A thick pad of linen was laid over the body.

462. The lid of the coffin was fastened down by two fibre ropes, the ends of which were tied in a double bow. The body was wrapped in a heavy mantle of linen, and a parcel of linen (2 pieces) was placed on the lid at the south end of the coffin.

475. The entrance to the recess was filled up with five pottery vases (type 68 *l*) placed upside down. Each jar was found full of mud.

480. The body was that of an old man with white

hair ; it was wrapped in a heavy matting of thick reed-stems. The walking-stick lay on the right side of the body. The matting was of large reeds, each reed being bound to the next at three points with fibre-string.

505. The lid of the coffin was secured in two places by fibre-rope. The head-rest, on which was a thick pad of cloth, was under the head.

506. Rough hole. The head-rest was under the head. A long staff and two small switches were laid beside the coffin. The lower part of the body had been slightly disturbed. Over the hole was a superstructure of loose bricks.

507. Rough hole. Traces of linen were found with the bones. The basket-coffin was badly decayed. The head-rest (pl. xviii, no. 7) was under the head. Over the hole was a brick superstructure of irregular form.

517. The lid of the coffin was made of loose reeds tied down with twisted linen cords. The body was wrapped in a light shroud of linen.

521. The body was wrapped in a light shroud of linen.

529. The body was swathed in linen.

549. Burial of a child of about twelve years of age. The body was wrapped in a linen shroud.

654. At the west of the basket-coffin were five rough pottery jars, standing mouth downwards, blocking the entrance to the recess. The jars contained mud, and were of the type 68 *l*.

31. Class C. SHORT WOODEN COFFINS.

Twenty-seven coffins of this class were found, all being under 50 inches long. The greater number were extremely simple, but nos. 51, 245, 532, 545, 650, and 651 were more elaborate ; these are fully described in chap. xi.

There are six methods of joining the corners of the short coffins, see pl. xxv :

1. Halving. Nos. 51, 215, 238, 255, 468, 532, 539, 553, 650 and 651.
2. Mitre. Nos. 28, 34, 216 and 559.
3. Shoulder-mitre. No. 543.
4. Double shoulder-mitre. No. 299.
5. Mitre-housing. Nos. 221, 227, 243, 253, 465 and 570.
6. Dovetail mitre-housing. Nos. 467, 570*.

The coffins of nos. 240, 245, and 545 were badly decayed, and it was not possible therefore to examine the construction of the corners.

There were four methods of lashing the planks together :

No.	Mortise lacing.	Holes and groove.	Tied corner.	Pinned corner.
468	—	×	×	—
543	×	—	—	×
553	—	×	×	—

It is probable that many of the box-coffins were not originally made for the purpose to which they were last put—*e.g.* no. 559. In the middle of the lid was a slight projection standing about a quarter of an inch high, in which two broken dowels were found, showing that a handle or something similar had once been fitted to it. It is possible that many of these box-coffins were originally for household use.

Twenty-two out of the twenty-seven graves were found to be quite undisturbed ; of the five which were disturbed, two had been completely broken up and the position of the bodies could not be recorded. Otherwise the burial was always contracted fully or partially, and laid on the left side ; twenty with the head to the north, one to the north-east (no. 465), one to the north-west (no. 238), two to the east (nos. 51 and 245), and one to the west (no. 468). There were eight male, ten female, and five child-burials in coffins of this class ; nos. 51, 215, 245 and 650 were not sexed for various reasons.

No. 28. A thick pad of linen was under the body. A button-seal (pl. xiv) was found on the neck ; it had evidently been suspended by a string round the neck.

No. 51. The coffin was panelled. Much linen clothing was laid on the body.

No. 215. The bones were wrapped in a thick shroud. The coffin was covered inside and out with stucco, which was painted bright red, the corners were secured with dowels, and the lid, which was loose, was fastened to the framework of the coffin by two pieces of palm-fibre rope tied in a reef-knot. The sides and ends of the coffin were ½ inch thick.

No. 216 (*Tarkhan I*, xxv, 216). The recess was closed with bricks measuring 13·5 inches long × 6·3 inches wide × 3·4 deep. The sides and ends of the coffin were ·7 inch, and rested on the bottom. The lid was secured to the framework of the coffin by tongues and was also tied down with rope. A thick pad of linen was placed over the body.

No. 221 (pl. xii, no. 8). The shaft was lined with mud 18 inches down from the top. The coffin was placed on the floor of the shaft ; the sides of the coffin were ½ inch thick, the ends ·9 inch ; the corners were secured by pins, and the bottom was inside the

ends and sides. Two pieces of cloth were placed over the body, one being of coarse texture, measuring 20 feet × 3 feet 6 inches; it had a fringe down one side. The second piece was of finer quality and measured 7 feet 3 inches × 3 feet 6 inches, and was sewn down the middle; one side had a fringe, the other was left rough.

No. 226. The coffin bore inscriptions on all sides for the official Shepses; the head-rest was also inscribed in ink with titles and name, the only such example in this cemetery. The inscriptions are at the top of pl. xv. (Long coffin, p. 17.—W. M. F. P.)

No. 227. The sides of the coffin were ·4 inch thick, the ends ·9 inch. The bones of the burial had been packed with chopped straw and mud, a quantity of which had evidently been placed in the stomach. A pad of Halfa grass was found on the feet. The coffin had been turned over by plunderers; the original position of the body could not therefore be exactly determined.

No. 238. The coffin was in the recess; the sides of the coffin were 1·1 inch thick, and the ends 1·3 inch; the corners were tied together with thongs, and the coffin was plastered inside and out, and was coloured red. The bottom was inside the ends and sides. The body was wrapped in a thick linen shroud. Three alabaster jars (types 42 *g*, 62 *c*) were placed at the north-west between the wall of the recess and the side of the coffin, together with a wooden head-rest. Five pottery vessels (types 37 *l*, 68 *h*, *j*, *l*) were found in the filling of the pit.

No. 240 (pl. xii, no. 5). The recess was reached by six rough steps; a large slab of stone, dropped portcullis-fashion from above, blocked the entrance of the recess. The slab measured 52 inches × 38 inches × 9 inches. The coffin, which was badly decayed, was in the recess. Each limb of the body was bandaged separately, the head being bound round by heavy rolls of cloth tied over fine linen. Three alabaster vessels (types 42 *d*, 61 *h*, 62 *k*) lay at the south of the body just beyond the feet.

No. 243. The coffin stood on the floor of the shaft.

No. 245. The coffin, which was panelled, was badly decayed.

No. 253. The coffin was in the recess; the sides of the coffin were ·7 inch thick, the ends ·6 inch; the bottom was inside the sides and ends. The coffin was plastered inside and out. The lid was loose, and had two half-round battens underneath at either end. A heavy linen pad was placed over the body.

No. 255. The coffin was in the recess; the sides of the coffin were 1·2 inch thick, the ends were not measured. The skull had short brown curly hair adhering to it. The grave had been disturbed by the cutting of a xxiind dynasty shaft to the north of it.

No. 299. The sides and ends of the coffin were ·7 inch thick. The burial had been disturbed.

No. 465. The sides of the coffin were 1 inch thick, the ends ·7 inch. The coffin was thrust into a shaft too small to receive it, and was left tipped up at one end.

No. 467. The sides of the coffin were ·7 inch thick, the ends ·8 inch. The corners were secured with round pins, and the bottom was fixed inside the sides and outside the ends. The lid was strengthened by three half-round battens. The body was wrapped in a linen shroud of very coarse texture.

No. 468. The coffin was in the recess; the sides of the coffin were ·7 inch thick, the ends ·5 inch. The planks of the sides and ends were joined by flat tongues and the holes-and-groove type of lashing; the corners were also lashed together. The head-rest (pl. xix, no. 15) was found outside the coffin to the west. The body was elaborately bound up in linen. Long black hair was still on the head.

No. 532. The burial was at the bottom of the shaft. The coffin was panelled, the false doors facing east (*Tarkhan I*, xxviii). A little cup of pottery was beneath the coffin (xxvii, 4). The body was wrapped in a shroud, and bound in a contracted position, the arms lying against the body.

No. 539. The coffin was in the recess; the corners of the coffin were united by square pins, and the bottom was outside the sides and ends. The body was wrapped in a heavy shroud, and bound in a contracted position. Two ox-horns were found in the filling of the pit.

No. 543. The sides of the coffin were 1·6 inch thick, the ends 1·2 inch; the corners were joined by round tholes, the lower portion of the sides formed one piece with the outer boards of the bottom. The lid was fastened to the framework by tongues. The recess was blocked up with stones and mud.

No. 545. Rectangular shaft with steps (pl. xii, 6). The coffin was in the recess. The coffin, which was panelled, was badly decayed. The recess was sealed up with thin slabs of stone plastered with mud. The north-west corner of the chamber had given way owing to another tomb-shaft being cut over it. Fragments of a jar (type 68 *l*), similar to that in

no. 238, were found in the filling of the pit. This burial was a good example of the care taken to orientate the body accurately. Since the chamber was not correctly orientated, the coffin was placed in it askew to ensure the head of the burial being towards the north.

No. 553. The sides and ends of the coffin were ·9 inch thick; the bottom was outside the sides and ends; the corners were joined by lashings only. The head-rest (pl. xviii, no. 2) lay beneath the head. The body was wrapped in linen.

No. 559. The coffin was in the recess. The sides and ends of the coffin were ·6 inch thick; the corners were secured with round tholes; the bottom was fixed inside the sides and ends. A thick pad of linen was over the body, and a glazed plaque with the sacred eye in relief was close to the neck.

No. 570. The coffin was in the recess. The sides of the coffin were 1·1 inch thick, the ends 1 inch; the corners were joined by pins; two small square battens were fastened beneath the coffin and also on the underside of the lid; a pair of eyes were painted on the eastern side at the north end. A linen covering was laid over the body.

No. 570*. The sides of the coffin were ·9 inch thick, the ends ·7 inch; the bottom was fastened inside the sides and ends. A thick shroud was wrapped round the body.

No. 650. Rough hole just large enough to hold the panelled coffin. The false doors on the coffin faced the east.

No. 651. Rough hole just large enough to hold the panelled coffin. The false doors on the coffin faced the east.

Nos. 650 and 651 were found by Mr. Wainwright on the western side of Mastaba 1060.

32. Class D. LONG WOODEN COFFINS.

Wooden coffins over 50 inches long were found in forty-one graves; thirty-five of these contained bodies. The bodies were in a contracted or semi-contracted position, with the exception of nos. 33, 67, 209, 286, 473, 479 and 548, which were extended.

All the bodies, whether contracted or extended, were placed on the left side with the head to the north, with two exceptions. In no. 233 the body was placed on the back with the legs drawn up against the body, the head being to the north. In no. 286 the body was laid on the back, the head being to the south.

There were eighteen male, twenty female, and three child burials in coffins of this class. No. 222 contained the bodies of a woman and two young children. The bones in nos. 56 and 429 were not found, owing to plunderers. Thirty-five out of the forty-one graves were quite intact when found; but nos. 56, 220, 248, 286, 429 and 519 had been disturbed anciently.

There were seven ways of joining the corners of the long coffins (see pl. xxv):

1. Square end. No. 217.
2. Halving. No. 233.
3. Mitre. Nos. 45, 209, 214, 233, 241, 516, 530, 531, 535.
4. Shoulder-mitre. Nos. 208, 226, 431, 557.
5. Double shoulder-mitre. Nos. 429, 522.
6. Mitre-housing. Nos. 218, 220, 222, 231, 246, 247, 248, 426, 473, 482, 519, 536, 554, 560, 632, 652.
7. Dovetail mitre-housing. Nos. 286, 485, 548.

The coffins in nos. 33, 56, 67, 479, 486, 556 were so decayed that it was impossible to determine their corner-joints.

Ten coffins had the planks forming the sides and ends joined together with wooden tongues as well as lashed with thongs. Seven coffins had the corners lashed; and of these, No. 557 had the corners fastened with pins also.

Types of lashing (see pl. xxv):

No.	Mortise lacing.	Secret mortise lacing.	Holes and groove.	Tied corner.	Pinned corner.
208	—	—	×	×	—
214	×	—	—	×	—
220	—	×	—	—	×
431	—	×	—	×	—
516	×	—	—	×	—
522	×	—	—	×	—
531	×	—	—	×	—
536	×	—	—	—	×
557	×	—	—	×	×
632	—	×	—	—	×

Sixteen graves contained head-rests of various types (see chap. x). For the sake of convenience a list of the types is given below, together with the graves in which they occur.

1. Block. Nos. 241, 536, 548, 554, 556.
2. Pierced block. No. 632.
3. Branching. Nos. 208, 479.
4. Block stem. No. 226.
5. Stem and abacus. Nos. 486, 522, 535.
6. Double stem and abacus. None.
7. Built stem. Nos. 209, 218, 233, 482, 652.

No. 33. The body was wrapped in linen.

No. 45. The body was wrapped in linen. An eye was roughly painted on the east side of the coffin at the north end.

No. 56. The shaft was not measured. The body had been removed, but amongst the *débris* of the broken coffin were two wooden sandals and a copper mirror. There was much white cloth at the north end of the shaft. Two eyes were painted on the east side of the coffin (pl. xiv).

No. 67. The coffin was much decayed. The body was wrapped in linen. The shaft was lined with brick for 23 inches from the top.

No. 208 (pl. xii, no. 12). The sides and ends of the coffin were 1·8 inch thick. The coffin was stuccoed inside and out, and the corners were lashed together (*Tarkhan I*, xxvii). The body had once been wrapped in a linen shroud. The head-rest was at the west of the head (pl. xviii, no. 8).

No. 209 (pl. xii, no. 11). The sides of the coffin were 1·5 inch thick, and the ends 1·4 inch. The corners were lashed with linen cord. The body was wrapped in a heavy shroud; traces of black curly hair were on the skull. The head-rest was at the north of the head (pl. xix, no. 22). A long staff was laid along the east side of the body.

No. 214. Irregular shaft. The sides and ends of the coffin were 1·7 inch thick; the corners were lashed together with leather thongs; the bottom was outside the sides and ends; the lid was secured by tongues.

No. 217. The sides and ends of the coffin were 2 inches thick; the bottom was inside the sides and ends. The coffin was stuccoed inside and out, and had two eyes painted on its eastern side at the north end. The lid was loose and had three battens on the underside and was secured with three twisted linen bands tied in reef-knots.

No. 218. The sides of the coffin were 1·1 inch thick, the ends 1·6 inch; the bottom was inside the sides and ends. The coffin was stuccoed inside and out, and was painted white inside and yellow outside; two eyes were painted in black on the eastern side. The lid was loose and had a batten at each end. A thick pad of linen was beneath the bones. The head-rest was found inside the coffin; it was of wood, stuccoed and painted the same colour as the coffin (pl. xix, no. 17). The tomb had been disturbed.

No. 220. A pad of linen was placed over the body. The tomb had been disturbed.

No. 222 (pl. xii, no. 9). The large coffin contained the remains of a woman with a child at her feet. The sides of this coffin were ·8 inch thick, and the ends 1·1 inch; the sides rested on the bottom, the ends against. The small coffin was placed at the side of the large coffin and held the body of a child; the sides of the small coffin were ·6 inch thick, the ends ·7 inch; the sides and ends rested on the bottom. All three burials were swathed in heavy linen.

No. 226. The sides of the coffin were 2·1 inches thick, the ends 2·3 inches; the sides and ends rested on the bottom; the coffin was painted white inside and out; the lid was fastened on with tongues. The coffin was inscribed on the eastern side. The head-rest, which was inscribed, was beneath the head (pl. xviii, no. 10).

No. 231 (pl. xii, no. 2). The shaft was lined with mud for 57 inches from the top. The sides of the coffin were ·9 inch thick, the ends ·7 inch; the sides rested against the bottom, the ends upon the bottom; three battens were fitted to the underside of the lid. The body was wrapped in a shroud of heavy linen, and packed round with a quantity of coarse cloth.

No. 233. The sides of the coffin were 1·5 inches thick, the ends 2·1 inches; the corners were fastened in three ways (nos. 2, 3 and 7), the last being a variation, the sides and ends rested on the bottom. The lid was domed, and secured to the coffin by tongues. The head-rest (pl. xix, no. 20) was close to the head, which was covered with very curly brown hair. The body had a thick shroud, and lay on the back with the knees drawn sharply up to the chest. A pointed wooden chisel, used in the original excavation of the tomb, was found at the bottom of the pit.

No. 241. The sides and ends of the coffin were 1·8 inch thick; the angles of the corners of the coffin were marked out in black ink. The roughly-made block head-rest was under the head.

No. 246. The sides and ends of the coffin were 1 inch thick; the bottom was outside the sides and ends. The lid was provided with three half-round battens. A long stick was laid beside the body on its eastern side.

No. 247. The sides of the coffin were ·7 inch thick, the ends ·5 inch; the bottom was inside the sides and ends; the coffin was exceptionally well made, and was painted white inside and out. The lid was loose, and had a batten at each end. A pad of linen was laid over the body. Small glazed beads and a horn bracelet were close to the left wrist. The

coffin was placed at the bottom of the shaft, and had been covered over with bricks plastered with mud.

No. 248. The sides of the coffin were 1·1 inch thick, the ends 1·3 inch; the bottom was inside the sides and ends. Both bodies were in the coffin. The recess had been blocked with bricks of two sizes, 12·7 × 6·1 × 3·5 inches, and 13·4 × 6·6 × 3·6 inches. The tomb had been disturbed by the cutting of another shaft on the west of it.

No. 286. The sides of the coffin were 1·2 inch thick, the ends 1·4 inch; the lid was tied down by two ropes at either end secured by reef-knots (*Tarkhan I*, xxvii, 286).

No. 426. The sides and ends of the coffin were 1 inch thick; the bottom was inside the sides and ends; the lid had two half-round battens. A thick pad of cloth was under the body, which was packed in with pads of linen. The tomb had been disturbed.

No. 429. The sides of the coffin were 1·3 inch thick, the ends 1 inch; the bottom was outside the sides and ends. The tomb had been plundered and the body destroyed.

No. 431. The sides of the coffin were 1·4 inch east, 1·7 inch west, the ends 1·9 inch thick; the bottom was outside the sides and ends; an eye was painted in black on the eastern side at the north end. The lid was fastened down with tongues. The body was wrapped in a slight shroud. This was the first example at Tarkhan of a coffin with sides of different thicknesses.

No. 473. The sides of the coffin were 2 inches thick at top, ·9 inch at bottom; the ends 1·9 inch at top, ·7 inch at bottom. The coffin was stuccoed inside and out and coloured yellow; two eyes were painted on the east side at the north end. The body was wrapped in a light shroud. A long stick was laid on the west side of the body.

No. 479. The coffin was too much decayed to be measured. Traces of linen were found in the coffin. At the bottom of the shaft at the north end were a head-rest (pl. xviii, no. 5), five wooden hoes of the usual type, a small basket, and a black polished jar (type 93*p*).

No. 482. The sides of the coffin were 1·1 inch thick, the ends ·6 inch; the bottom was outside the sides and ends. The body was wrapped in a thin shroud. The skull rested on a quantity of *tibn* (chopped straw); the *tibn* had evidently been once wrapped in linen and used as a pad for the top of the head-rest (pl. xix, no. 19), which was found outside the coffin, between it and the rock-face of the recess. A small blue-glazed disc was at the neck amidst a quantity of long black hair. A quartzite palette bearing traces of red paint lay to the west of the head.

No. 485. The top and bottom of the shaft were lined with brick. The sides of the coffin were 1·9 inch thick, the ends 2 inches; the bottom was outside the ends and sides; the lid was fitted with three battens. A thick linen pad was placed over the body. Two wooden chisels used in the original digging of the tomb were found at the bottom of the shaft (*Tarkhan I*, x, 5).

No. 486. The coffin was too much decayed to be measured. The head-rest (pl. xix, no. 16) was beneath the head.

No. 516. The sides of the coffin were 1·9 inch thick, the ends 2·1 inches; the corners were joined by lashings only. The body was wrapped in a heavy linen shroud; two garments, pleated in narrow folds, were laid on top. A barrel-shaped carnelian bead was found at the neck.

No. 519. The sides and ends of the coffin were 2 inches thick; an eye was painted on the eastern side at the north end. The tomb had been disturbed.

No. 522. The sides and ends of the coffin were 2·2 inches thick; the bottom was outside the sides and ends; the corners were joined by lashings. The lid was fastened down with tongues. The body was wrapped in a light shroud of linen, and about it were laid big parcels of linen to keep it in a contracted position. The head-rest (pl. xix, no. 18) was found beneath the head. At the north of the coffin was a pottery dish containing traces of resin or incense; the dish was of very fine ware and red polished (type 39*j*). A long staff lay beside the body on the west. A large reed-coffin, quite empty, was found standing on end at the foot of the shaft.

No. 531. The sides of the coffin were 1·9 inch thick, the ends 2 inches; the corners were joined by lashings only; an eye was painted on the eastern side. The lid was fastened down with tongues and four cords of palm-fibre rope.

No. 535. The sides of the coffin were 1·6 inch thick, the ends 1·9 inch; the bottom was outside the sides and ends; the corners were joined by lashings. The coffin was inscribed on the north, east, and west sides; it was in a bad state owing to the attacks of white ants (pl. xiv). The body was

wrapped in linen, and a garment pleated in narrow folds was placed upon it. The head-rest lay on the lid of the coffin at the north end.

No. 536. The sides and ends of the coffin were 1·9 inch thick; an eye was painted on the eastern side at the north end; the lid was fastened down with flat tongues. The body was wrapped in thick linen. The block head-rest was found under the pelvis, where it had probably slipped when the coffin was lowered.

No. 548. The sides of the coffin were 1·9 inch thick, the ends 1·5 inch; the bottom was inside the sides and ends with four battens to keep it above the floor of the shaft. The lid was loose, and was fitted with a half-round batten at each end. The body was wrapped in a light linen garment. The head-rest (pl. xviii, no. 3) was under the head.

No. 554. A brick superstructure covered the shaft. The sides of the coffin were 1·6 inch thick, the ends 1·5 inch; the bottom was outside the sides and ends. The lid had three half-round battens. The body was wrapped in linen. The block head-rest was under the head.

No. 556. The body was placed on a wooden tray, 31·7 inches × 19·1 inches; there was a slight beading around the edge. The block head-rest (pl. xviii, no. 4) was under the head.

No. 557. The sides of the coffin were 1·3 inch thick, the ends 1·6 inch; the bottom of the coffin was outside the sides and ends; the corners were joined with lashings. The body was wrapped in a light shroud. Three thin bracelets, of a fibre resembling wood, were on the left wrist. The shaft and recess were very slightly out of orientation, therefore the coffin was set a little askew to correct the inaccuracy.

No. 560. The bottom of the coffin was outside the sides and ends. The body was wrapped in a linen garment. The head was separated from the body and was found in the north-east corner of the coffin; otherwise the burial was intact.

No. 632 (532 in plate). The sides of the coffin were 1·7 inch thick, the ends 1·4 inch; the bottom was under the sides and ends. The body was wrapped in a thin shroud. The head-rest (pl. xviii, no. 1) was under the head.

No. 652. The bottom of the coffin was outside the sides and ends; the lid was strengthened by two half-round battens. The body was laid on a pad of linen. The head-rest was at the east side of the head.

CHAPTER IX

THE SMALL MASTABAS

33. At the southern end of the Tarkhan cemetery were two tombs of a more elaborate type than those just described. (*a*) A mastaba situated on top of one of the cemetery hills (see *Tarkhan I*, lxxii); (*b*) a well-made chapel situated at the bottom of a knoll and entirely covered by sand.

(*a*) The mastaba was a rectangular structure (pl. xii, no. 1), oriented north to south, and measuring 51 feet 8 inches × 35 feet 6 inches. It was constructed of solid brickwork, but at the east was a long passage entered by a doorway 30 inches wide, which was placed a little to the north of the centre of the eastern side. The dimensions of the passage are 40 feet 10 inches × 4 feet 3 inches (pl. xiii, no. 1). Part of the eastern face of this passage now stands 28 inches high, but the greater part of the mastaba has been denuded down to a few inches.

In the western wall of the passage were four false doors constructed of brick recessing, three having in front of them a stone altar roughly carved with a *hetep* sign in the middle, and a shallow hole on either side. Two shafts were found in the middle of the mastaba, the northern one measuring 54 inches N.–S. × 47 inches E.–W., and the southern one 40 inches square. Both of these were lined with mud to the bottom, and had chambers on the western side. No trace of a burial could be found in either.

34. (*b*) The chapel (pl. xii, no. 13) was much better preserved. It consisted of a long open courtyard running E.–W., and measuring 35 feet × 12 feet 7 inches. This court was cut out of the hard gravel in the slope of a hill, its eastern end being level with the desert sand, and the western 101 inches below the surface of the hill. The sides of the courtyard were carefully plastered with mud, which was then whitened.

In the eastern face of the court was a narrow doorway (pl. xiii, no. 2), the entrance to a short passage measuring 63½ inches long × 21 inches wide × 58½ inches high. A rough limestone lintel over the eastern end of the passage measured 48 inches long × 7 inches high × 21 inches deep. Beyond this the passage was roofed with wood.

The dimensions of the inside chamber were 167 inches × 41 to 45 inches. An arched roof 76 inches high covered the chamber, its spring starting 51 inches from the pavement level (pl. xiii, no. 3). In the western wall of the chamber was a false door (pl. xiii,

no. 4), roughly made of mud mixed with *tibn* (chopped straw), and measuring 44 inches high × 15½ inches wide × 5 inches deep, with three recesses or steps. In front of this, on the pavement, was a large *hetep* sign constructed of mud, its dimensions being 19½ inches N.–S. × 13½ inches E.–W., and 3¼ inches high.

Fifty-five feet west of the entrance to the chapel was a large square shaft measuring 68 inches N.–S. and E.–W. and 15 feet deep. This is dealt with as grave no. 225; owing to the distance of the shaft from the chapel it is uncertain whether it has any connection with the latter, and it has therefore been described as an ordinary tomb. The burial place of the person for whom the chapel was built was supposed to be behind the false door. We refrained from breaking it, and earthed up the chapel. But the next year we found the chapel had been opened, and the false door broken down, without finding any tomb behind it. This makes it the more probable that the shaft 225 was the tomb belonging to the chapel. The mastaba was of a type that was common at Meydum and therefore may be of the ivth or vth dynasty. The chapel is difficult to date, but as it was found just below a number of vth dynasty tombs it may well belong to the same period.

CHAPTER X

HEAD-RESTS

35. All references in this chapter to head-rests are to the numbers in pls. xviii, xix. Head-rests seem to have first come into use in Egypt at the beginning of the iiird dynasty. They have not up to the present been found in prehistoric or ist and iind dynasty graves. The earliest representation of a head-rest appears to be one figured on a wall in the tomb of Hesy at Sakkareh, which is dated at the early part of the iiird dynasty.

The head-rests shown on pls. xviii, xix, and listed on pl. xx, were all found in a series of tombs, dating from the end of the iiird dynasty to the xith, in a cemetery close to the Arab village Kafr Ammar in Upper Egypt. Owing to the great variety of head-rests found in this cemetery, it has been thought desirable to classify them for future reference, and they have therefore been divided for the sake of clearness into two classes:—

A. Head-rests manufactured from one piece of wood.

B. Head-rests constructed of two or more pieces of wood.

For dating purposes, however, we cannot avail ourselves of this classification, as specimens of both classes are found in graves of the same date. Both classes may, therefore, be subdivided for this purpose into the types which are given below:—

Class A.	Class B.
1. Block.	5. Stem and abacus.
2. Pierced block.	6. Double stem and abacus.
3. Branching.	7. Built stem.
4. Block stem.	8. Multiple stem.

36. Type 6. The earliest type of head-rest seems to be type 6 (figs. 14 and 15), of which three examples were found (graves 235, 238 and 468). This is the form of two head-rests painted in the beginning of the iiird dynasty on one of the walls of the tomb of Hesy. The examples found in the cemetery at Kafr Ammar were placed beneath the heads of extremely contracted bodies, which were laid in small wooden boxes and baskets. These are dated to the iiird dynasty by the evidence of the shaft and recess type of the grave. A similar type of head-rest found in a cemetery close to the pyramid of Meydum has been dated to the close of the iiird dynasty. It is curious that such an elaborate type of head-rest should be of so early a date, but it appears not to have been found up to now in burials of a later period.

Type 5 (figs. 16, 18). Another early type of head-rest is no. 5, which, however, had a larger range of date. Only three perfect examples were found this year (graves 486, 522 and 535), each in a box-burial placed in a square shaft and provided in one instance with a solitary offering-jar (grave 522). An imperfect head-rest of the same type was also found in grave 546. This type has been found as early as the iiird dynasty at Meydum (*Meydum and Memphis III*; pl. xxi), at Deshasheh (*Deshasheh*; pl. xxxiv), where it was dated to the vth dynasty, and in a vith-dynasty tomb at Mahasna (*Mahasna and Bêt Khallaf*; pls. xxxvii and xxxviii). This type is known with a fluted or a smooth stem, both forms having the same range of date.

Type 1 (figs. 2, 3, 4). Head-rests of this type also were used throughout a long period, from the latter part of the iiird dynasty to the vth. They are met with at Meydum (*Meydum and Memphis III*; pl. xxxix), and one example was found at Deshasheh, which is figured on pl. xxxiv of the publication of

that name. This type is a very simple one, and occurs in graves containing both contracted and straight burials. Six examples were found in the Tarkhan cemetery in box and coffin burials, the shafts of the burial chambers being rectangular in form in each case (graves 241, 536, 548, 553, 554 and 556).

TYPE 2 (fig. 1). This type is a variety of the above, and but one example has been discovered (grave 632). It was found associated with a box-burial containing a contracted body, the shaft leading to the burial chamber being in this case nearly square. It is practically the same type as the block head-rests, except that its middle portion has been roughly cut into eight pillars. It seems that no examples have been found in other cemeteries, and its date can, therefore, only be judged to be the vth dynasty from the style of burial in which it was found.

TYPE 3 (figs. 5, 6, 7, 8 and 9). Six examples were found in the Tarkhan cemetery associated with various types of burial (graves 207, 208, 236, 479, 506 and 507). It is a form very difficult to date, as there are no examples mentioned in any publication, with the exception of one of a similar type discovered in a small cemetery at Zowieh (*Gizeh and Rifeh*, pl. xxii). The Zowieh example is dated to the vith dynasty as a string of amulets was found in the same cemetery. The pottery found in the cemetery was, however, similar to the pottery found at Deshasheh, and this type of head-rest may, therefore, belong to the late vth or early vith dynasty. These are always cut from naturally branched wood.

TYPE 4 (fig. 10). Only one grave, no. 226, contained this type of head-rest, and the latter bears the name and titles of the man for whom it was made inscribed upon it in black ink. The name is SHEPSES, a common one in the vth dynasty. A similar type of head-rest is figured on pl. xxxiv of *Deshasheh*, and there also is dated to the vth dynasty.

TYPE 7 (figs. 17, 19, 20, 21, 22, 24, 25). By far the greatest number of head-rests found are of this type. Two varieties are known, one in which the head-rest is made of two pieces, either the headpiece or the base being one with the stem, whilst in the other the head-rest is made up of three pieces. The better made head-rests of this type (figs. 19, 20 and 21) seem to be associated with square shafts (graves 233 and 505), or rectangular (grave 482). This latter grave, however, did not possess a burial chamber, and the shaft had necessarily, therefore, to be of a rectangular shape in order to accommodate the wooden coffin. The small square shaft was in common use in Egypt during the ivth and vth dynasties, but after that date it gradually lengthens out into rectangular form. Failing direct evidence, therefore, and on the above grounds alone, it seems permissible to date the finely made head-rests of this type to the ivth or vth dynasty. The head-rest shown in fig. 22 (grave 209), which is somewhat roughly made, is difficult to date. As, however, it was found close by the head of an uncontracted burial, which was placed in a chamber with a rectangular shaft, it might well be placed at the close of the vth or the beginning of the vith dynasty. We are, however, on more certain ground in the case of the head-rest fig. 25 (grave 509), for it is definitely dated by pottery at the xith dynasty. Head-rests of this date, of which numbers were found in the Tarkhan cemetery, are generally badly made and of clumsy shape as compared with earlier examples, and are not included in the table.

TYPE 8 (figs. 23, 26). Two head-rests of this type were found in the Tarkhan cemetery in graves 234 and 526. In both instances they were found in box coffins containing partially contracted burials. The coffin of grave 234 was placed in a rectangular hole about 25 inches deep, with a piece of pottery just north of the coffin and another piece under the pelvis. See *Tarkhan I*, pl. xxvii, 234, for this grave showing the head-rest in position. Grave 526, also, had one jar outside and to the north of the coffin, which occupied a recess cut at the west of a shaft measuring 77 × 43 inches. The pottery found in both graves is similar to the xth and xith dynasty forms in *Gizeh and Rifeh*. The two head-rests figs. 23, 26, must, therefore, be of that period.

37. All the types of head-rest in the Tarkhan cemetery were found in graves occupied by either sex. Thirty-two were placed with the bodies of males, eighteen with females. In four graves (nos. 532, 537A, 558 and 570) a brick or stone was placed in lieu of a head-rest, either beneath or close by the head. This use of a substitute has also been met with in the small iiird dynasty cemetery at Meydum.

In the majority of cases the head-rests were not made only for burial purposes, for they nearly all show signs of much wear. There was, however, definite proof in one case (grave 218) that the rest was newly supplied for the purpose of the burial, as it was of a very flimsy make and painted a dull yellow, the same colour as the coffin.

In rare cases in the early burials the head-rests were found in position just beneath the base of the skull, but as a rule they lay on their sides beneath or

in close proximity to the head. In grave 536 the head-rest was found to have slipped down to a position beneath the pelvis of the burial. The act of lowering the coffins vertically into the graves prepared for them would naturally tend to shift the head-rest from its proper position, as very few of the shafts permitted of the coffin being dropped in a horizontal position. The fact of the head-rest being thus frequently displaced also shows that the bodies were not inspected again by the relatives after being lowered in their coffins, as the support of the head would have been the first thing to be readjusted in position.

In grave 535 the head-rest was not placed with the body, and was found standing on the coffin-lid just above the head, whilst in grave 468 it was discovered on the ground on the western side of the coffin.

38. The greater number of the head-rests found at Tarkhan, excluding the branching type, have their bases of about the same length as the part that fits the head. This seems to have been the rule in the Early and Middle Kingdoms, but in the head-rests of the New Kingdom the base was frequently elongated out of all proportion to the rest of the structure.

As a general rule, the head-rests found in the Tarkhan cemetery are of an even height, front and back, but in some cases (graves 221 and 553) the top was cut slightly tilted in order to fit the head properly.

Judging from the length and breadth of the upper portion of the head-rests, it would appear that the people who used them did not dress their hair very elaborately. Many of the African pillows in use at the present day are purposely made very narrow at the top in order to avoid disarranging the complicated head-dress.

In graves 497 and 550, however, which are dated at the xth and xith dynasties, there were found two head-rests whose upper portions had their ends roughly cut down, doubtless to accommodate some particular style of hair-dressing.

Most of the head-supports shew that several thicknesses of cloth were placed between the wood and the head in order to make them more comfortable. At the present day, however, most of the African tribes that use the wooden pillow do not employ any padding, but merely rest their heads on the bare wood. In one case (grave 535) a quantity of fine chaff was found wrapped up in linen and laid on the top of the head-rest.

The height of the early rests, *i.e.* those dated from the iiird to the vth dynasty, ranges from 5 to 7 inches, the average being $5\frac{5}{8}$ inches. Those of later date seem to be slightly higher, with an average of $5\frac{7}{8}$ inches.

As a rule they are all made of plain wood, which was perhaps polished, but four examples shew traces of paint adhering to them (graves 218, 233, 505 and 532).

39. The two most common ways of joining the parts of the built-up head-rests together were by means of flat or square tongues cut at the top and bottom of the pillar. Sockets or recesses to receive these were made in the top or base of the head-rest, and into these the tongues were forced. In some cases, if the tongues were a little too small to properly fit their sockets, wooden wedges were inserted with them in order to ensure a good hold. Occasionally horizontal pegs were driven through the top and bottom of the head-rest in order to engage the tongues. Another, but rare, method of joining the parts of a head-rest was by the aid of small round dowels fitted to the top and bottom of the column and entering corresponding holes drilled in the head-piece and base (fig. 13). This type of joint only occurs in one burial (grave 440) in the Tarkhan cemetery, the pottery in which dates it at the xth or xith dynasty. Such a method of joining the parts must have proved extremely unsatisfactory as regards strength, which doubtless accounts for its rarity.

The following notes on construction may be added to the table on pl. xx:

Fig. 16, 486, has a curved top to the base fitting a hollow beneath the stem. Tenons top and bottom of stem, fitting into top and base, are held by wooden pins.

Fig. 18, 522 and 535 have tenons top and base, and a slight round base on the base block.

Fig. 11, 14, 235 and 238, similar, have slight round bases 1·7 across; between them two holes for leather lashing (seen in place) going through base and over tops. A groove beneath the base, joining the holes, held the leather.

Fig. 15, 468, was similar; with tenons top and bottom of the stem.

Fig. 22, 209, had tenons, but no pins.

Fig. 20 had a square tenon on the stem, and hole in top plate.

Fig. 19, 482, had stem and top in one, with a tenon at the base.

Fig. 25, 509, square tenons, top and base.

Fig. 21, 505, three tenons at foot, one at top.

652 had flat tenons top and base.

Fig. 26, 526, had top and base lashed together through projections; 532, 218, 233 were painted yellow or white; 652 was painted green.

CHAPTER XI

WOODEN COFFINS

40. MOST of the tombs in the Tarkhan cemetery belonging to the iiird to the xith dynasties contained burials in wooden boxes or coffins. The majority of these were in excellent condition, and it was, therefore, possible to gather much information from a technical point of view as to their construction, an opportunity seldom afforded in a cemetery of this period.

All of the coffins are made of a wood that belongs to the Dicotyledonous order, either *Ficus sykomorus* or *Platanus orientalis* (Plane), which must have been far more common in early times in Egypt than now. Most of the coffins and boxes, however, shew that all due regard was paid to economy in their manufacture, for numerous examples occur in which one or more short pieces of wood were joined end to end in order to make a plank long enough to be of use for the side or end of a coffin.

None of the joint edges of the boards of a coffin were at all straight, but only those edges which formed the actual edges of the coffin. Most of the planks were cut from trunks or boughs of trees varying from 4 to 11 inches in diameter, and either the rougher wood was reserved for the manufacture of coffins, or there was a great difficulty in procuring wood from which straight planks could be cut. The Egyptians overcame the difficulty by using, as far as was possible, planks cut from the same bough or trunk, and placing the edges of the planks together so that the convex edge of one plank fitted the concave edge of another. If, as it frequently happened in employing this method, the joints were not quite close, the edge of one of the planks was slightly trimmed to obviate the defect. Small interstices between the joints were always carefully filled in with plaster.

All of the planks used in the Tarkhan coffins were sawn, the marks being clearly discernible on the surface of the wood. That this sawing was done with some difficulty will be seen from the portion of a plank shewn in *Tarkhan I*, pl. xxiv, no. 3. It would appear that the carpenter had to use his tool at every angle in order to get through his task, this being due to the curved shape of the cutting edge of the ancient saws. The method employed in sawing a piece of wood into planks was to fix the wood in the ground, or tie it vertically to a strong support fixed in the ground, and saw downwards. After the plank had been cut about half-way, it was loosely lashed at the top to the piece of wood from which it was being cut. A stick was then inserted obliquely in the lashing, and to the upper end a weight (stones in a bag?) was fastened in order to keep the rope from slipping down (pl. xxv). The carpenter was by this means able to keep his cut sufficiently open to work his saw easily, while at the same time there was no risk of the end of the plank swaying about, and consequently being liable to split away from the block from which it was being cut. Excellent examples of carpenters employing this method are to be seen in LEPSIUS, *Denkmaeler II*, pls. 13, 49, 108, 111, 126; and in *Deshasheh*, pl. 21.

41. In all cases the joints between the planks of the coffin were most carefully plastered up, as well as any flaws or holes left in the wood by knots. Even the seams between the bottom of the coffin and its sides and ends were also carefully filled in. Possibly there was a fear either that something very essential to the future life of the body might escape, or that insects might enter through crevices and destroy the bodies or their linen wrappings. Against the latter idea is the evidence that the lids of the coffins were seldom plastered down.

In some cases a flaw, such as a shake in the wood, was taken out and another piece of wood inserted in its place. This is shewn in one case in pl. xxv, no. 23, where a very large piece of wood was thus inserted. The edges of the hole and the piece that fitted it were bevelled to prevent the inserted bit of wood from falling inside the coffin, and it was lashed in by means of leather threaded through holes as shewn in the plate. The seam all round was then filled in with plaster.

The coffins of the earliest type found in the Tarkhan cemetery were nearly square boxes, the custom of using which had come down from predynastic times. The burials placed inside them were necessarily very sharply contracted, and lay on the left side with the head to the north. It is doubtful in most cases whether the boxes were purposely made for the burials, or whether they were employed first of all in household use. In two cases (graves 539 and 559), the lids of the boxes possessed a small boss or

projection in the centre of the outside, with one or more holes drilled in it, holding broken dowels, to which once a handle was fastened. In four other cases it is evident that the boxes employed as coffins were originally painted a bright red inside and out (graves 215, 238, 532), and white (in grave 651). This would hardly have been done if the boxes were made solely for burial purposes.

These short coffins, though generally of early date, were also sparsely employed in the late vth or early vith dynasty, as was proved in the cemetery at Tarkhan by a button-seal being found in grave 28 (pl. xiv). This grave contained a box measuring 37 inches long × 19 inches wide × 15 inches deep.

With the exception of seven instances, the coffins, both long and short, found in the Tarkhan cemetery consisted merely of a framework of wood provided with a bottom and a lid. The seven exceptions were taken from graves 51, 175, 245, 532, 650 and 651, and, being of special interest, will be described in full a little further on in this chapter.

42. We will now proceed to describe the construction of the coffins, beginning first with the methods of corner-jointings. Seven distinct corner-joints were found in the large number of coffin-burials recorded, and these have all been classified into types for future reference, as follows:

1. SQUARE END.
2. HALVING.
3. MITRE.
4. SHOULDER-MITRE. (See pl. xxv.)
5. DOUBLE SHOULDER-MITRE.
6. MITRE-HOUSING.
7. DOVETAIL MITRE-HOUSING.

On plates xxii, xxiii, will be seen a chart showing the various types of cornering employed, the sizes of the coffins, the sizes of the tomb shafts and their chambers, together with the type of head-rest found in each coffin. In nearly every case the coffins or boxes contained adult burials, which are denoted by the letters AM or AF according to sex. The coffins that held infant or child-burials are shown by the letter C. In every case, the longest side of the shaft or chamber is given first, then comes the width, followed by the depth or height of the shafts or chamber, as the case may be. The coffins were measured to the tenth of an inch, as it was thought best that this should be done, though it should be remembered that much shrinkage must have taken place in the wood since the coffins were placed underground.

43. TYPE 1. SQUARE END (pl. xxv, no. 1). This was the rarest type of corner met with in the Tarkhan cemetery, for only one example was found, which occurred in grave 217. It appears here in a coffin made of exceptionally heavy wood, the sides and ends of which are 2 inches thick. The small size of the shaft, 37 inches N. to S. × 33 inches E. to W., and the style of the chamber, a mere recess, would mark the burial as being of an earlier date than the vith dynasty. The coffin, however, is certainly of a later date than the iiird dynasty, for it has two eyes painted in black ink on its eastern side, close to the north end, and is of a longer type than the coffins of the earlier dynasties. As far as it is possible to ascertain, this method of joining corners was practically never used before Roman times in Egypt.

TYPE 2. HALVING (pls. xxiv, xxv, no. 2). This system of corner-joint came down from predynastic times, when it was universally employed. In every case in the Tarkhan cemetery it is found associated with an early type of burial. Eleven clear cases occur in graves 51, 215, 233 (one corner), 238, 255, 468, 532, 539, 553, 650 and 651. One grave (no. 245) contained a badly decayed coffin in which it seemed possible to detect this method of jointing. All of the coffins and boxes with this type of cornering contained contracted burials, the position in most cases being very marked. None of the coffins, with the exception of one example, are over 41 inches in length and 25 inches in width, the average measurements being 33·7 inches long × 18·6 inches wide × 16·8 inches deep. The exception (grave 233) measures 70·5 inches × 16 inches × 15·5 inches. Five of the coffins contained head-rests, two of these (graves 238 and 468) being of a very early type (pl. xix, no. 15). The coffins with this type of corner-joint, as will be seen from the chart on plates xxii, xxiii, were contained in various types of graves.

44. TYPE 3. MITRE (pl. xxv, fig. 3, and pl. xxiv, fig. 23). Thirteen examples of this kind of jointing were found in graves 28, 34, 45, 209, 214, 216, 233 (two corners), 241, 516, 530, 531, 535 and 559. The mitring was, as a rule, very roughly done, the instrument employed being an adze or chisel. The method of cutting the angle of 45° necessary for the mitre was clearly shown in grave 241. After the boards which were to form the sides and ends of the coffin in this grave were dowelled together so as to make planks of the breadth necessary for the height of the coffin, a central line was drawn vertically across the breadth of the planks, both back and front (*i.e.* inside and outside the coffin), in black charcoal. On either side of this central line, another vertical line

was marked out. The distance between the two outside lines corresponds with the length or breadth of the interior of the coffin in the case of the inside of the board. The two outer lines on the outside of the board were the same distance apart, plus twice the thickness of the wood. Each end of the board was then bevelled with an adze, the vertical lines on the inner and outer sides acting as guides for the tool (pl. xxv, no. 26).

The mitre-joint is found in short coffins and also in long coffins that contained either straight or contracted burials. The sizes of the coffins containing adult bodies range from 37 inches long × 19 inches wide, to 73 inches long × 17 inches wide. The first measurement is that of a coffin containing a burial with a button-seal, and is therefore of a rather later date than the other measurement, which was that of a coffin of the Deshasheh type. In four of the coffins head-rests were placed, one of the block type being found in grave 241, one of the stem and abacus type in grave 535, and two of the built stem type in graves 209 and 233. The majority of the coffins had their ends and sides made of very stout wood, which alone enabled this type of joint to be used with success. In every case where the mitre-corner was found, the sides and ends of the coffin were found to have fallen apart owing to the shrinkage of the wood, which was, however, perfectly sound. A joint of this description depends entirely on the wooden pins that hold it together.

TYPE 4. SHOULDER-MITRE (pl. xxv, no. 4). Five coffins were found with this type of joint in graves 208, 226, 431, 543 and 557. The joints in every case were cut with a chisel or a very fine adze, the marks of which are plainly seen in the wood. In every case the cutting was well done, and the corners, when the graves were opened, still held. The method was a very sound one, for only a direct pressure on the sides and ends of the coffin from inside would spring the corners. It also obviates any tendency of the coffin to rack. In every case, as would be expected, the wood employed was considerably over an inch in thickness, as this type of joint could not well be cut out in thin wood.

The coffins were of the long variety in four cases, but the method was also employed in the short coffin, measuring inside 36½ inches long × 19 inches wide × 17 inches deep, which was found in grave 543. The lower plank of either side of this coffin was cut out of one piece of wood with the corresponding plank of the bottom, a feature which is common in the first two dynasties, but is rarely met with in later times. Two coffins with this type of joint contained head-rests, one of which (grave 226) was inscribed with the name Shepses, and is therefore dated to the vth dynasty. The other (grave 208) contained a rest of the branching type which has been put down to the late vth or early vith dynasty. Coffin 431 was unusual, because the sides were of an unequal thickness, *i.e.* 1·4 and 1·7 inch respectively. This was the only case of disparity in size noted in the coffins found.

TYPE 5. DOUBLE SHOULDER-MITRE (pl. xxv, no. 5). This type was very uncommon, for only three examples of it were found (graves 299, 429 and 522). This is really a more complex form of the previous type, but probably not any more secure for the addition of the extra angle. The chisel was employed in this case also, for the coffin in grave 522 shewed the marks of this tool very clearly. Of the three coffins two were long (graves 429 and 522), and the remaining one short (grave 299). One contained a head-rest (grave 522), of a form in use from the ivth to the vith dynasty. In the same grave as the head-rest a red polished pottery dish of an unfamiliar form was found (type 39*f*); it possesses a flat base, an unusual feature in a dish of this kind.

TYPE 6. MITRE-HOUSING (pl. xxv, no. 6, and pl. xxiv, nos. 6 and 24). This was the commonest method of jointing found in the earlier graves in the Tarkhan cemetery, being employed in twenty-two of the coffins dating in the ivth and the vth dynasties. It occurs in both short and long coffins. The ends of the planks were mitred, but a rectangular projection was left at each of the top corners of the sides, which exactly engaged a notch cut in each of the top corners of the ends. This projection was trimmed flush with the outer surface of the ends, when the framework of the coffin was completed. As the sides and ends of the coffin were fastened together solely by wooden pins driven diagonally through their mitre-joints, the projection in its seating at the top of the corner-seams was practically useless as regards strengthening the joint. The system employed would have been far sounder if a wooden pin had been driven vertically down through the projection into the ends of the coffin, which, however, was never done.

Seventeen of the graves, in which coffins of this type were found, had square, or nearly square, shafts, none of which exceeded 43 inches × 43 inches in size. The remaining nine possessed rectangular shafts, ranging from 51 inches to 120 inches in

length, and 24 inches to 43 inches in breadth. Most of the shafts had recesses to hold the burials on the western side and at the bottom of the well. In every case these recesses were roughly cut in the shaft side.

TYPE 7. DOVETAIL MITRE-HOUSING (pl. xxv, no. 7). This joint is an improvement on type 6, and the projection is cut at an angle to prevent its leaving its seating. As long as the wooden pins held that fastened the mitred corners of the coffin together, it would be quite impossible for the corner-joints at their tops to separate. In the graves dated from the iiird to the vth dynasty in the Tarkhan cemetery, five examples of this type of jointing were found (graves 286, 467, 485, 548, 570*). Though rare in this period, the joint was, however, the only one employed from the end of the vith to the xith dynasty at Tarkhan, and was in common use in other cemeteries in the xiith dynasty and later.

The coffin found in grave 233 was peculiar in that there were three methods of jointing employed. One corner was of type 2, two were of type 3, and the last of type 1, except that a single dovetail projected into the side of the coffin just below its upper edge. This will explain why this same coffin is mentioned under three different types.

Four graves (nos. 240, 479, 486 and 556) contained wooden coffins which were in too bad a state to allow the designs of their corners to be determined. In four other graves (nos. 33, 50, 56 and 57) the joints were not examined owing to an oversight.

With the exception of six instances, the corners of all the coffins were united by pins driven diagonally through the wood as shown on pl. xxiv, no. 6. The holes to receive these pins were drilled very cleanly through the wood, each pin being slightly tapered so as to enable it to hold tightly. The projecting ends seem to have been trimmed flush with the surface of the wood by means of a chisel. The coffin in grave 537 was peculiar, as square instead of round pins were employed. The holes to take these were also square, and must, therefore, have been cut with a chisel instead of being drilled. Owing to bad cutting, the middle portions of the pins were visible in the inside corner of the coffin.

45. In many cases, cords or thongs were used in conjunction with the pins in order to effect a firmer union, as remains of these were often found in the holes. When cords or thongs were employed, a shallow groove was cut in the wood connecting each pair of pin-holes, so that the lashing might lie concealed and level with the surface of the wood. This system of binding may be seen on pl. xxiv, nos. 2 and 24. The cords shewn in the two photographs are modern, as the original lashings were in every case in too decayed a state to admit of their being photographed in place. Leather thongs were mainly used for the corners, but in some coffins a substance resembling linen was used for this purpose.

A method used more rarely was an inside binding of the corners as shewn on pl. xxiv, no. 23. This was found in six cases only (graves 45, 208, 209, 214, 431 and 516). Two slots were cut, one just below the other at the extremities of the sides and ends of the coffin boards—the top slot communicating with the one below it by undercutting. Leather thongs were then threaded through the slots, and the corners of the coffin tied together. No pins were used with this method, but reliance was placed solely on the leather. It is probable that only raw hide could be used for this purpose, as it would have been difficult to tie the corners firmly enough together with a treated leather. The contraction of the hide in drying after being tied would keep the mitred edges of the coffin boards firmly together. It was unfortunately impossible to photograph the whole side and end of any of the coffins that were bound in this way, as their lower portions were too far decayed to allow of their being moved without breakage. The sides and ends of all the coffins were in place when found, and the lashings, though broken, were still to be seen projecting from their slots. Thick string is used in the illustration to shew the method of lashing.

46. All of the planks that formed the coffins were joined together by means of loose flat tongues, three of which were usually inserted in the sides of each plank and two in the ends. The slots made in the edges of the planks to receive these tongues were cut with a small chisel, the marks of which remained. Curiously enough, in most cases, each slot was much longer than the width of the tongue it was to accommodate, doubtless to permit of the latter being shifted along slightly in one slot in order to properly engage the corresponding slot in the next plank. Despite this seeming defect, the edges of the boards frequently fitted together so tightly that it was often difficult to get them apart for examination.

The majority of the tongues in a coffin seem to have been made from one thin lath of wood, which was cut up by means of a broad adze or chisel. The length required for a tongue having been determined

a V-shaped cut was made across one side of the lath by two strokes of the tool in opposite directions, and the tongue was then broken off. The ends of practically all the tongues examined shew the slight bevelling caused by this initial cut and the roughness due to being broken off.

47. Besides this method of joining the planks together, three others were used in connection with the tongues. These are all shewn in pls. xxiv, xxv, nos. 8, 9, and 10, and may be spoken of as—

1. MORTISE-LACING.
2. SECRET MORTISE-LACING.
3. HOLES AND GROOVE.

Mortise-lacing (pl. xxv, no. 8) was the most common of the three methods used, as it occurs in seven coffins out of a total of thirteen that had their planks lashed together. These seven coffins were found in graves 214, 516, 522, 531, 536, 543, and 557. The method employed was as follows: Two parallel mortise-holes, one below the other and communicating by undercutting, were cut horizontally in the wood close to the upper or lower edge of the plank, from a quarter to a half of the thickness of the plank in depth. Corresponding mortise-holes to match these were cut in the planks above and below. Leather or raw-hide thongs were then threaded through, as shewn by the black cord in the illustration, and the planks were thus bound together. The triangular bridge of wood that separates the mortise-holes, and the space between them and the edge of the plank, was slightly recessed in order to allow the binding to lie flush with, or slightly beneath, the surface of the wood.

2. SECRET MORTISE-LACING (pls. xxiv, xxv, no. 10). This is a great improvement on the above method both as regards strength and neatness. It was found in three graves only (220 [lid], 431 and 632). Only one mortise-hole was cut at the edge of the plank, the hole penetrating horizontally about half the thickness of the wood. Another mortise-hole to meet this was cut in the edge of the plank, and thus the two holes in section formed a right angle. In using this method, half of the lashing was hidden from sight in the thickness of the wood, and thus presented a much neater appearance. As regards strength, also, this method is superior to the first, for the bridge left at the angle of the plank was enabled to be of a more substantial character.

The photograph of this kind of lashing reproduced in pl. xxiv, no. 10, will shew what the actual result looked like on the coffin. The cord shown in this photograph must not be taken for the original binding material. The coffin photographed was found in grave 632. In the case of the coffin in grave 220, only the lid was treated in this way, the planks of the sides, ends, and the bottom being joined together by tongues alone.

3. HOLES AND GROOVE (pls. xxiv, xxv, no. 9).

Three coffins, found in graves 208, 468 and 553, had their planks bound together by this type of lashing. The method was a very simple one, for it merely consisted of cutting or drilling a hole through the plank close to its edge to correspond with a similar hole in the plank below, or above it. The lashing, therefore, was threaded right through the wood and was visible before the holes were plastered up both inside and outside the coffin. Every care was taken to conceal the thongs as much as possible by recessing the leather.

Very ancient leather in Egypt is as a rule in too bad a state to be recoverable owing to the intense dryness to which it has been subjected, which makes it lose its nature. Fortunately, however, it was just possible to identify as some form of hide the substance used in binding the planks of coffins together. The leather used in the coffin found in grave 431 was in a fair state of preservation when found, and it was therefore possible to remove most of one side of the coffin, and photograph the lashing protruding from the slots before it fell to pieces. This will be seen on pl. xxiv, no. 20. The method of tying the planks shewn here is by means of secret mortise-lacing, as mentioned before, and the ends of some of the leathern thongs employed may be seen projecting from the mortise-holes between the black crosses. The bottom plank of the side of the coffin photographed is missing from the foreground, as it was in too bad a state to be removed from the grave. The two mortise-holes on the left-hand side, and at the top, of the picture were used in binding the corners of the coffin together in lieu of pins, as shewn in no. 23 on the same plate.

In all of the coffins, each board was bound to its fellow in three places in the case of the sides, and in two places at the ends.

On reference to one of the charts on pl. xxi, it will be seen that the majority of the coffins which have their planks lashed together also have their corners strengthened by thongs, the use of pins being generally dispensed with, as for example in the case of the last three graves. It is noticeable, also, that the inside lashing of corners (pl. xxiv, no. 23) is

never used in conjunction with pinning, a fact which is strange, for the combination of the two would have immensely strengthened the coffins. It will be seen, also, that the type of corner used, as well as the type of head-rest found in these coffins, varies very considerably, showing that the custom of lashing planks together did not belong to one short period, but extended over a long period of time.

48. It should be noted that the coffins of the later dynasties, *i.e.* from the vith to the xith dynasty, have their corners invariably fastened by means of a dovetail mitre-housing, pins being alone employed to join them up. A distinguishing feature between the coffins of the early and the later dynasties is the way in which the planks were joined together. In the earlier period, *i.e.* from the iiird to the early vith dynasty, slots and flat tongues were exclusively employed for this purpose, but in the later period, from the vith to the xith dynasty, small round dowels were used instead. The later coffins are always simply made, and long enough to permit of the bodies being placed inside them at full length.

49. Nine coffins had one or two eyes painted in black on the eastern side and just at the northern end. The graves in which these eyes occur are nos. 45 (1), 56 (2), 218 (2), 226 (1), 431 (1), 473 (2), 519 (1), 531 (1), and 570 (2), the numbers in brackets denoting the number of eyes. The form of eye, with the exception of those painted on the coffins in graves 431 and 570, is peculiar, as will be seen from an example copied from the coffin in grave 56, and shown in pl. xiv. All of the coffins with painted eyes, with but one exception (grave 570), were of the long variety, that is over 50 inches long. The exception measures 26·7 inches long × 11·4 inches wide × 9·9 inches deep inside, and it held the body of a child. The eyes seen on the coffins in graves 431 and 570 were of the type usually found from the vith to the xiith dynasty.

Two coffins (graves 226 and 535) had inscriptions in black ink on their north, south, and eastern sides, close to the top. The first was accompanied by an inscribed head-rest (pl. xviii, no. 10). The wood of the coffin in grave 535 was somewhat badly destroyed by white ants and the whole of the inscription could not be recorded. What was left of it is shown on pl. xiv.

50. The lids of all the coffins were joined together with slots and tongues, with the exception of the one belonging to the coffin in grave 220, which had its planks lashed together, the coffin itself being joined up by tongues. In most cases, the covers were fastened down by the aid of tongues, but sometimes they were found loose. (Graves 241, 246, 473, 516, 530, 539, 543, 553, 557 and 632.)

Three coffins (graves 216, 247 and 286) had their lids secured with ropes made of palm-fibre, and one with a twisted linen rope (grave 217). In all four cases, the lid was lashed to the coffin in two or three places, at each end of the coffin, and in the middle. The ropes when found were in a wonderful state of preservation, and still in place. They were all tied with a reef-knot, the surplus of the ends being then tied again in a simple knot on top of the reef-knot. Another method used in fastening the coffin-lids in this period was by the aid of battens fastened to the undersides of the covers close to their ends. These battens fitted tightly against the inside ends of the coffins, and thus prevented any tendency for the lid to either slide in the transport of the coffin, or to be displaced by sand entering the chamber of the tomb when the shafts were being filled up (graves 253, 426, 467, 485, 554, 570 and 652). These battens were secured to their covers by round pins, lashings being sometimes employed in conjunction with the latter, the same holes being used for both. The battens were either square or half-round, the former being the most common. They varied from about 1½ inches to 4 inches in thickness.

51. The planks forming the bottom of a coffin were fastened together solely by means of slots and flat tongues. There were, however, two ways of fastening these bases on, for they were fixed either inside or outside the framework, both methods being about equally used. When the bottom planks were built inside the framework, they were fastened to the frame in every case but one by round pins driven in from the outside. In grave 431, flat tongues were employed instead of pins, and were driven in in the same way. When the bottom of the coffin was outside the ends and sides, round pins were also used as a means of fastening, the holes for these being drilled obliquely in order to prevent any possibility of the bottom dropping out. In two coffins (graves 231 and 467) the bottom planks were inside the sides of the coffins, whereas the ends were outside. The coffin in grave 222 was built in exactly the opposite way to this, the ends resting upon the base while the sides were outside it. The outer bottom boards of the coffin in grave 543 were one with the bottom planks of its sides, a method of construction which was found to be very common in the coffins of the ist dynasty at Tarkhan, but was practically unused later. Two

of the coffins (graves 218 and 548) were provided with battens beneath them as a means of raising them from contact with the floors of the recesses in which they were placed. These battens were set at each end of the coffin and fastened on with round pins. In every case, the bottom planks of a coffin run the same way as the planks forming the sides. In those coffins possessing vertical side and end planks, to be described later, the bottom boards are placed across the width of the coffin and not lengthways.

52. In grave 556, a wooden tray, the greater part of which was badly destroyed when found, was placed upon the body. It consisted of a flat board, ·6 inch thick, made of several pieces of wood joined up with slots and tongues. A rectangular slip of wood, the same depth as the board and ·3 inch thick, was placed around the edge, the corners being mitred, and fastened by small round pins. On the top of this slip a half-round beading was put, ·4 inch high and wide, that projected beyond the slip and overhung the boards to the extent of ·1 inch. This beading was also fastened down with pins. In each of the two corners of the board which were recovered, there was a rectangular hole cut through the wood, measuring 1·1 inch long by ·5 inch wide.

It is difficult to say of what this piece of woodwork once formed a part, as there was no other trace of a box, or woodwork, in the grave, which was quite untouched. As it was found carefully placed upon the body, it is perhaps a survival of the pre-dynastic tray. The burial was that of a young woman lying in a very contracted position, with a head-rest under her head of a somewhat uncommon shape (pl. xviii, no. 4). A drawing of a corner of the tray with a section of one of its sides will be found on pl. xxv, no. 11.

53. A curious type of coffin was found in graves 51, 245, 532, 650, and 651. The first three were found by Prof. Petrie and the writer, and the last two by Mr. Wainwright. The design is evidently that of a wooden house provided with two or more doorways and fitted with a rounded roof. As all of the boxes are of a somewhat similar type, it will suffice to describe that found in grave 532, which was the most elaborate (*Tarkhan I*, xxviii). Two rectangular frames of wood were first made to serve as the upper and lower portions of the box, the corners being halved and secured by wooden pins and lashings (pl. xxv, nos. 19 and 22; pl. xxiv, no. 19). Along the bottom of the framework that was to form the upper portion of the box, a narrow groove was cut, ·8 inch wide and ·6 inch deep, running round all four sides. A similar groove was also made along the top of the framework that was to serve as the bottom of the box. The purpose of these grooves was to take the thin vertical planks of wood that formed the sides and ends of the box proper. In addition to the groove on the top of the lower frame, another was cut inside to accommodate the planks that formed the floor of the box. This groove to take the floor-boards is shown in pl. xxv, no. 12, the vertical strokes in it marking the position of the joints between the boards. When the box was assembled together, the thin planks that were to form its sides and ends were first inserted in the grooves prepared for them in the lower frame, each plank being joined edge to edge with its fellow by means of slots and tongues in two places. The lower end of each board was fastened in by small pins driven through the side of the groove from the inside of the box. When all the planks had thus been secured below, the upper frame of the box was then fitted into place and fastened down in a similar way. The boards forming the floor of the box must have been put into place before the corners of the lower framework were joined together. The next process was to attach vertical battens of wood to the four corners of the box, these being fastened solely to the frames above and below by round pins driven in diagonally upwards and downwards. It will be seen from pl. xxv, no. 20, that the inside portions of these battens were vertically recessed to take the edges of the thin boards that formed the walls of the box, thus making a very solid corner.

After these battens were secured, four additional vertical pieces of wood were inserted in what was to form the front of the box, and were fastened in the same way as the corner-battens, making a series of panels between them, as shown in pl. xxv, no. 13. The centre and two outside panels represent the doorways of the house, each having at the top the characteristic roll, which is a special feature over the doorways of tombs of the Old Kingdom. These rolls, in the case of this coffin, were cut at the bottom of small pieces of wood inserted in the panels and fastened in position by four pins, shown by black spots upon the hatching in pl. xxv, no. 13. The wide panels on either side of the central doorway show a curious feature in the shape of a number of horizontal half-round slips or bars of wood, pinned in two places to the thin wall of the coffin behind them.

These are ·6 inch wide and 5·8 inches long. The outer end of each bar is bevelled down to an almost flat edge, the inner end being cut square. It is difficult to say what these bars really mean, unless, in conjunction with the wood behind them, they represent some form of shutter. The fact that one end of each slip is flattened would show that it is not a question of mere ornamentation here, but that they represent something that was in real use in a house.

The remaining three sides of the box are comparatively plain, with the exception of a single vertical batten placed in the centre at the back of the box and fastened in exactly the same way as those on the front. The thin planks that form the ends are strengthened by a half-round horizontal bar placed across their middles, measuring 1·9 inch wide. This bar was fastened to the end of the box by three pins, and was not in any way secured to the corner battens (pl. xxv, no. 14). The floor of the box was strengthened beneath by a long flat batten, 2·2 inches wide, running lengthways (pl. xxv, no. 22). This was also fastened in position by small pins. The corners of the cover were joined by a shoulder-mitre, as seen from beneath, but from above it appears as if a square-end joint were employed (pl. xxv, nos. 17 and 21). This is due to the fact that the heavy wooden ends overlap the side pieces of the cover, thus concealing the joints. This may be seen in a photograph of the corner of the lid reproduced in pl. xxiv, no. 21. The main portion of the cover was made of thin planks joined together, edge to edge, by slots and tongues, and strengthened in four places beneath by battens, which were fastened to the planks by small wooden pins. This planking was curved, a groove being cut in the thick end-pieces of the cover, which were of solid wood, to take the ends of the planks (pl. xxv, no. 18). The battens beneath the planking were, of course, also curved, so that they might properly fit the concave inner surface of the lid. This curvature of the battens was effected by cutting them thus from solid wood, and not by artificial bending in any way. This form of lid was copied for stone sarcophagi, the earliest example known being found in a large tomb of the iiird dynasty at Meydum (*Meydum and Memphis*; pl. x, no. 4). It was very extensively employed in the xiith dynasty and extends down to the xviiith, beyond which period the form was no longer used. The lid was found to be just resting on the box, no tongues securing it in position. To prevent its shifting, however, a ledge, ·3 inch high, was left on the inner portion of the upper frame of the box, the corresponding part in the lid being cut away to fit this.

The coffins found in graves 51, 245, 650 and 651 were all of somewhat similar type to the one just described, but none of them possessed more than two panels representing doorways, or had the small horizontal slips of wood. The box in grave 245 had fallen to pieces through decay, and it was only possible to determine its type by finding intact two of the pieces of wood with rolls that were once fixed at the top of the doorways. It is quite certain that these panelled box-coffins belong to a very early period, for the five examples found contained burials placed in a very contracted attitude. Four of the boxes held adult bodies, but that taken from grave 651 contained an infant whose body occupied about half the space of the box. The burial was always on the left side with the head to the north, the face being turned to the parallel side of the box, which always fronted east.

Below are given the principal measurements of these panelled box-coffins for comparison:

	532	650	651
Length out	40·9	40·9	34·3
„ in	37·0	37·5	31·3
Breadth out	25·0	23·5	19·8
„ in	20·7	20·5	18·0
Height out	24·4	23·1	19·6
„ in	23·2	22·2	18·5
Depth of framework	3·2	2·8	2·4
Width of vertical posts	3·2	2·8	2·4
Width of doorways	3·3		
Depth of doors and panels	1·1		
Width of barred panels	5·8		
Lid outside	40·9 × 24·5 × 4·6		
Lid ends thick	3·1		

CHAPTER XII

XTH AND XITH DYNASTY BURIALS

54. THE greater number of the graves here described were found on the high desert at Kafr Ammar, situated slightly west of the iiird to the late vth dynasty cemetery recorded in chapter v. A few graves were also found at the head of a small sandy valley in the middle of the early dynastic cemetery.

The total number of graves cleared was forty-

four, thirty-one being intact and thirteen disturbed. The orientation, with but two exceptions, was strictly constant, the head being placed to the north, and the body lying either straight on the back or on the left side. Five graves (nos. 65, 234, 509B and C) and 526) contained bodies that were partially contracted. The two exceptions in orientation occurred in graves 509B and 540, the bodies of which had their heads turned to the south.

Graves 44, 134, 152, 247 and 460 had one or all of their bodies broken up, so that it was not possible to record the original positions they were placed in.

In some graves more than one burial was placed inside them, the bodies lying side by side at the bottom of the shafts or in recesses cut in their western sides.

Owing to the depth of some of the graves, the bones, rotted by damp, were frequently in too bad a condition to sex—fourteen burials out of seventy-one being doubtful on this point. Twenty-four male, twenty-five female, and eight child burials were found amongst the remaining fifty-seven. The burials in every case but one (grave 509) were placed at the foot of, or in recesses cut in the sides of, rectangular shafts ranging from 62 inches to 142 inches long, 18 inches to 43 inches wide, and 20 inches to 192 inches deep.

55. Pottery was found in practically all of the graves of typical xth–xith dynasty form. There was very little variation as to design, each grave as a rule only containing pottery of one shape.

In twenty graves twenty-two head-rests were found beneath the heads of the bodies contained in them. Seventeen of these rests were of a very clumsy make and of the built-stem type, with stems very short and thick. (Graves 65, 133, 164, 427, 438, 440, 487, 495, 497, 509B, 534, 550, 601, 603 and 605.) Three rests in graves 464, 509D and 540 were also of the built-stem type, but were of a more graceful shape, and had their bases and stems cut out of one piece of wood, the portion of the rest that fitted the head being joined to the stem by means of a tongue. Two graves (nos. 234 and 526) contained head-rests of an entirely different type to any of those found either in this period or in that of the iiird to the late vth dynasty. They consisted of a base and head-piece united together by six stick supports. These two rests are shown on pl. xix, nos. 23 and 26.

Graves 256, 497 and 509B contained wooden bows lying alongside the bodies, all unfortunately in a very decayed condition. With the bow in grave 256 there were also laid two arrows, each made of a long reed provided with a hard-wood point (*Tarkhan I*, x, 7).

A long walking staff was placed in graves 509C, 509D (both males), and 550. A light switch was also found in grave 440 (female). Two quartzite stones, evidently used for the purpose of grinding corn, were placed with the dead in graves 439 and 490.

Inscribed coffins were found only in graves 493 and 509C. That in the last grave was in fair preservation, and was able to be removed into the open to be copied (pl. xv). Nearly all of the bodies had at one time been wrapped in linen shrouds or garments, but rarely were the fabrics in a sufficient state of preservation to bring away for examination, or even to inspect properly on the spot. A cloth cartonnage case enclosing the head of the body in grave 497 was found to be in fair preservation. It was painted white, the eyes and mouth being delineated in black. The wig was coloured in alternate stripes of red, black, and green.

Grave 497 also contained two saucers of a thin red pottery ware. One of these saucers contained a small quantity of charred straw, while the other was blackened on the inside and must have been used as a cover to the saucer containing the straw. Unfortunately both dishes were found in the filling of the shaft, and were removed by one of our men before I could examine them *in situ*.

Articles for the toilet were apparently not buried with the dead in this cemetery, with the exception of beads and scarabs. Large ball-beads made of green glaze were found round the necks of the bodies in graves 489 and 601. Similar beads, but much smaller, were used for a bracelet in grave 603. Cylindrical beads of green glaze employed as necklaces were taken from graves 133 and 509D, while a small ornament in the shape of a cylindrical-shaped bead made of blue paste was found close to the neck in grave 509B (pl. xxvi, no. 4).

Ornaments of stone were only seen in two tombs (nos. 239 and 509D). The first grave contained a young child with a string of small carnelian beads of disc form round each wrist. The last grave held in one of its chambers an infant burial with a barrel-shaped bead around the neck, together with one of cylindrical form, both being made of carnelian. A pebble with a natural hole in it was taken from the

neck of the child buried in grave 509B (pl. xxvi, no. 5).

On the lid of one of the coffins in grave 509 (chamber B) was placed a copper axe (pl. xxvi, and *Tarkhan I*, vi, 11, 12, 13), the blade of which measured 4 inches × 2½ inches. This had once been inserted in a wooden handle 27·7 inches long and 1 inch in diameter. This handle, which had fallen into the coffin through partial decay of its lid, was covered with a knitted cord covering at its butt end to serve as a grip. The blade was fastened to the handle by means of a groove cut in the latter, both being firmly lashed together by leather thongs passed through four holes in the blade. Each end of the top of the blade was prolonged in order to enable it to be fastened to the handle by means of copper bands.

Practically all of the burials were placed in wooden coffins in the cemetery, but in the majority of cases the wood was in too decayed a state to examine properly. The coffins found to be intact were made of wooden planks of less substance (except coffins in grave 509) than was met with in the iiird to the late vth dynasty cemetery at Tarkhan. Another distinguishing feature also was the *sole* use of round wooden dowels for joining together the planks, instead of the flat tongues employed in the earlier cemetery. The writer has not been able to obtain any information as to the method employed of uniting together the boards of coffins in other cemeteries belonging to the Old and Middle Kingdoms, but, in the absence of pottery or other dating material, it might be possible in future work to roughly date a coffin by observing whether tongues or round dowels were employed in the manufacture.

In every case in the present cemetery the corners of the coffins were of the dovetail mitre-housing type.

56. The general details of the graves are tabulated on pl. xxviii. The body was almost always on the back, the direction of the face (F) being only that of the head. It is probable that the few cases where the body was on the side were only due to its accidentally rolling over in the coffin at burial. The head-rest is specified by its number in the series, pls. xviii, xix; or by its general class, B = pl. xix; or by its type, as vii. The pottery partly refers to some types which were included with the ist-dynasty pottery in *Tarkhan I*, here marked T. The greater part of it is referred to the special drawings on pl. xxvii. The pots are by no means of one period. Some are probably of the vith or viith dynasty, as xxvii, 3; some are of the ixth dynasty, as 6, 7; others of the xth, as 25 to 28; some of the xiith, as 20, 21. The discrimination of these will be better seen after the publication of *Harageh*. Most of the details of the contents of the graves are stated in the notes.

Supplementing the register we may describe some points in detail.

133. Small cylinder beads of green glaze were found near the pelvis of the eastern burial. Over sixty jars of the forms 27 and 28 were found in the shaft piled one upon another like stairs.

234. The wig was of plaits ending in curls. It was too decayed to be removed.

239. The body lay on the back with the legs crossed.

256. The arrows had hard-wood points (*Tarkhan I*, x, 7). A scarab was by the left hand.

509. The shaft was very shallow, but the hill sloped up steeply over the chambers. The plan should be followed, on xii, 14. Chamber A was quite empty. The entrances to B and D were bricked up, and intact. In B were three coffins side by side, and a small one of a child upon the western coffin. The sides and ends of the east coffin rested upon the bottom boards.

In the east coffin was an old woman, partly contracted; in the west an old woman, similarly; the scarabs (xxvi, 2, 3) were close to the neck with the blue paste bead, 4. In the middle coffin was a young man, slightly contracted. The copper axe in handle (xxvi, 1) had lain upon the coffin, and a long bow lay to the west of the coffin, 60 inches long, 1·1 thick. The child was in a box with a high barrel lid, originally a toilet box, with knobs for tying down the lid.

In D were two coffins, and a small one on the eastern. The western contained a middle-aged man; the eastern, a young woman, with the jar 22 and a wooden cylinder on the north end of the coffin.

Chamber C has a trench cut in the floor, 28 inches wide, 36 deep, and the full length. A ledge 7 wide is on either side. The coffin in the trench was much decayed; it contained a middle-aged man. The lid was covered with stucco, and inscribed; but so much had fallen away that only the parts shewn in pl. xv could be copied. From the pottery this multiple tomb appears to be of the xth dynasty (see pl. xxvii, 1, 5, 19, 22, 24, 26). This group gives a good dating for scroll scarabs before the xiith dynasty.

526. Body partially contracted.

601. Large ball beads were close to the neck.

603. Small ball beads of green glaze around neck of western body.

604. Besides thirty-five jars in the shaft, there was one at the head of each body.

CHAPTER XIII

BURIALS AND TEMPLE OF THE XXVTH DYNASTY

By G. A. WAINWRIGHT

57. THE tombs of the xxiiird–xxvth dynasties were mostly situated on the spurs and hillocks to the south of the great valley cemetery published in *Tarkhan II*. These spurs are marked K, P, R and S on the Position Map in *Tarkhan I*, pl. lxix. The whole site seems to have been abandoned after the xith dynasty, and it was not till after the xxiind dynasty that anything more is found, when there was a fairly large and flourishing population, which was buried here.

58. There were two distinct types of graves, the one consisting of a smallish shaft about 50 × 39 inches square, and varying in depth from 9 or 10 feet to about double this amount. At the bottom were two and sometimes more small chambers about 8 × 5 feet and about 3 feet high, containing as a rule a large number of painted wooden coffins each enclosed in a box with a pent roof and four corner-posts, which stuck up to the level of the roof ridge. This was in the style of the contemporary coffin of the nurse of the daughter of Tirhakah in the Florence Museum. In some cases only mummiform coffins were used without the box. The other type of grave was quite unlike the first, being a very large well which descended to a great depth, often below water level. At the bottom were chambers, and occasionally there were chambers opening out on the way down. The mummies in these latter graves had no coffins, and they with their bandages were all one black pitch-like mass of resin. Nothing was obtained from these shafts except once or twice a set of ushabti figures. In one burial there were 400 of these little figures, and in another 398. These last were better made than the others, and among them were some not of the usual mummiform shape with seed baskets, but these were dressed in a kilt, with one leg advanced, one hand holding a whip, and the other hanging at the side. As near as could be counted owing to breakages these figures appeared to have been about 36, and seeing that both totals are in the neighbourhood of 396, it is probable that the intention was to bury 36 gangs of ushabtis, each gang consisting of ten labourers and a foreman.

The objects discovered all belong to a well-known group generally placed between the end of the xxiind and rise of the xxvith dynasties. Unfortunately, as usual, no scarabs with names were discovered to help to date the objects or to arrange them in sequence, and although we got a nice sequence in three generations of inscribed coffins, these unfortunately had nothing with them. In fact the adults appear to have been buried, as an almost invariable rule, with nothing whatever but a bead-work covering, and a Ptah-seker-Asar figure. The numerous amulets were all found with children.

It is therefore very difficult to get a sequence of types of anything by which we can arrange the finds in their original order; but as the whole period from the end of the xxiind dynasty to the rise of the xxvith covers less than a hundred years—not more than three generations—there was hardly time for much change to shew itself.

59. By comparing the pottery with that found at Defenneh—the Greek Daphnae—*Tanis II*, pls. xxxiii–xxxvi, we are able to see how far our pottery resembles types used in the xxvith dynasty. The Defenneh pottery is closely dated, for the fortress is known to have been founded at the beginning of the xxvith dynasty, so that nothing can be dated there earlier than this date. There were found two classes, the native Egyptian and the foreign Greek pottery of the Greek mercenaries, and while much of our pottery shews a general resemblance to the Egyptian classes from Defenneh, the greater part of it is quite unlike.

However, we had one small class of handled pitchers of small size and of a greenish-grey ware, pl. xxxiv, 60-69. They are distinctly foreign, and no. 60 is identical with no. 44, pl. xxxv, *Tanis II*. We here touch firm ground, for these types and their associated material must be at the extreme end of our period, perhaps even dating to the early part of the xxvith dynasty. At any rate, they cannot be earlier than the end of the xxvth dynasty. We can therefore at once divide our graves into a late group with these pitchers, and an earlier group without this class. The graves of the late group are nos. 13, 14, 18, 26, 27, 35, 51, 60, 66, and the types of pottery which they contained are nos. 2, 6, 7, 9, 12, 15, 19, 20, 21, 22, 26, 35, 39, 43, 54, 55, 58, 59, 60 to 69, 73. To

this list must be added, by association, graves 10, 31 and 34, which also contained types 15, 59, but did not contain the handled pitchers. The groups of these graves are here tabulated:

	Eyes.											
	Black brows and pupils.	Incised.	Black details.	Beadwork.	Bes Aegis.	Isis and Horus.	Taurt.	Papyrus sceptres.	Cowries.	Table offerings.	Ptah-seker-Asar figure.
10	×	×								×	
13		×		×		×	×				
14	×			×	×	×					
31				×							
34											?
35										×	
51		×	×						×		
66	×		×					×			

18, 26, 27, 60 contained only pottery.

From this table it is evident that the features peculiar to this period, such as the eye amulets and beadwork coverings, ran right down to the end of its history, and if any one of the types of eyes began earlier than another, it certainly lasted on as late. All the three types will be found to be in use at the same time in the tomb group 69, and two of them at the same time in tomb group 25, pl. xxxii, nos. 1 and 3. Those eyes with the details all marked out in lumpy black ridges are less common than the other two types. As was noticed in *Hyksos and Israelite Cities*, p. 18, we find here that the amulets and other ornaments tended to die out before the xxvith dynasty, for out of the twelve graves belonging to the very end of the xxiii–xxvth period, four contained none of these classes whatever, but only pottery.

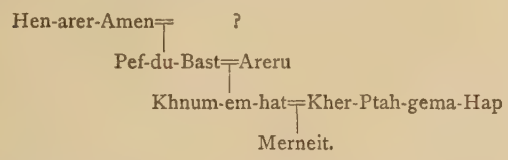
60. *Description of plates.* Pl. xxix shews the tomb group K.A. 34. This tomb was a family vault containing fifteen burials, the great majority of which were unfortunately uninscribed, and had nothing whatever with them. Three, however, had inscriptions containing the owner's genealogy, and as an inscribed coffin of each of the generations named was found, it is possible to trace the gradual decadence of style.

The three are nos. 1, 2, 3, of this plate. 1 is the coffin of Pef-du-Bast, the grandfather, evidently named after the king Pef-dudu-bast, who was reigning in 725 B.C. 2 is that of Khnum-em-hat, the father; and 3 is that of Merneit (?), the daughter. It is quite apparent that there is considerable decline in art between that of the coffin of Pef-du-Bast, perhaps about 680 B.C., and those of the two succeeding generations. Curiously enough the coffin of the father Khnum-em-hat is far more decadent in style than that of his daughter Merneit, for while the father's coffin is made in the cheapest way possible, of small pieces of wood, the daughter was buried in far handsomer style, the coffin being made of massive planks, and being much more ornamented in a finer and clearer style of painting. There here appears to be a marked exception to the general rule that progressive improvement or decadence in art represents a succession of periods, by a study of which it is possible to restore the original sequences. However, a glance at the plan of the grave (pl. xxxiv) will explain the anomaly; for from the position of the coffins it is evident that Merneit (3), the daughter, died and was buried before her father Khnum-em-hat (2), who from his position in the tomb appears to have been the last of the family to have been buried here, and to this agrees the evidence of the pot found with him, which by its shape belongs to the very end of this period or rise of the next (see previous section). This is the explanation of the otherwise surprising fact that the daughter's coffin, which should represent a later stage of art, actually shews an art better than that of her father, which should represent an earlier stage. Thus the rule of sequence turns out not to be violated by this case, but on the contrary to be vindicated, for the series shews a progressive deterioration in style. The great necklace painted on the coffin of Pef-du-Bast still occurs on Merneit, but has disappeared entirely on Khnum-em-hat, while the Genii of the dead of Pef-du-Bast still take up a large part of the coffin of Merneit, but in Khnum-em-hat are reduced to a very small size and only occupy an obscure position.

The coffin of Pef-du-Bast is well made and well painted on a smooth-surfaced stucco, very different to the rough bad stucco of the other two, and the hieroglyphs are well formed and neatly painted. Merneit's inscription is very rough, and is reproduced in line drawing on pl. xxxi, no. 3.

61. *Genealogy.* On coffin no. 1, Pef-du-Bast is described as ỉs-ỉr ? Pf-du-bꜣśt-t sꜣ n ỉmn ḥn ỉrr. The Osiris the ? Pef-du-Bast, son of Ḥen-yrer-Amen. On coffin no. 2 Khnum-em-hat is described as ỉs-ỉr ? ḫnm-du-ḥꜣt sꜣ n ? Pf-du-bꜣśt-t mut-f ỉrrw. The Osiris the ? Khnum-em-hat son of the ? Pef-du-Bast, his mother (was) Areru. On coffin no. 3, Merneit is described as ỉs-ỉr mr-nt sꜣ-t n ? ḫum-m-ḥꜣt mut-s ḫr-pṯḥ-ḳmꜣ-ḥp. The Osiris

Merneit the daughter of the ? Khnum-em-hat, her mother (was) Kher-ptah-gema-hap (?) The query mark represents a group of signs of a builder, of which the meaning is unknown. From these we can draw up the family tree as follows :—



The spelling of the name on Khnum-en-hat's coffin, which is here read Pef-du-Bast, is uncertain, for a *t* has been inserted in the first syllable, and Bast is written with a cat-headed goddess instead of the group found on Pef-du-Bast's own coffin. But as the said sign itself reads *pef* the name no doubt stands for Pef-du-Bast. The unknown group which precedes the name probably represents a trade or title, and this was evidently handed on from father to son. The title was not confined to this family, as it occurs again on the table of offerings which comes from quite another grave, no. 10, and is figured in pl. xxxi, no. 1.

62. Merneit's coffin has no beard attached to the face, as she is a woman, although when dead she becomes identified with Osiris, a male god. On observing to see if this rule were adhered to, it was found that out of 11 beardless coffins examined, 7 contained female skeletons, while 4 contained male, and all the bearded ones contained male skeletons, so that there was an intention to distinguish between male and female coffins. Yet at this late period, when work was carelessly done, the undertakers did not always take the pains to supply a suitable coffin.

No. 4 is the group found with the above burials, the right figure belonging to Pef-du-Bast; the left figure probably being Khnum-em-hat's. It was lying on the top of the inner coffin as figured in pl. xxxiv, and the tied-up pot in the middle was found behind Khnum-em-hat's coffin, as were the packages of white powder. This pot is of the type pl. xxxiii, no. 15. A package of this white powder was found stuffed into the mouth of Merneit. Her mummy was stuffed with rolls of cloth and boiled resin. A molar had fallen out of the dry jaw, and had lodged in between the third cervical vertebra and the wrappings. The roof of the chamber had evidently fallen in, between the time of the digging of the grave and Merneit's burial, and three pieces of wood such as no. 6, pl. xxx, were laid end to end on the broken stone, to facilitate the sliding in of the coffin.

Nos. 5 and 6 are a set of Ptah-seker-Asar figures found in the north chamber of this tomb. Pl. xxx, no. 4, shews an old basket, and no. 5 a part of a thick straw mat, which was found at the bottom of the well blocking up the entrance to the north chamber. Repairs are visible at the bottom. The straw mat (no. 5) is made by stitching together coils of straw. Under these, at the very bottom of all, the well was floored with branches of tamarisk.

63. Pl. xxx, no. 1, is an inscribed table of offerings from grave no. 10. For the sake of clearness the inscription is published in line drawing on pl. xxxi, no. 1. As mentioned above, it also contains the unknown title. The table was found with a vase of the type 59, which dates it to the end of the period, and not long before the xxvith dynasty. For in grave no. 13 this type was also found with one specimen of type 60, and it itself, though not identical with any Egyptian type found at Defenneh, belongs to the same general group as nos. 19 and 21, *Tanis II*, pl. xxxiv. The table of offerings seems to be of unusually fine workmanship for so late a period; it is no doubt affected by the artistic revival of the xxvith dynasty, and to this agrees its Old Kingdom appearance. With it was found a libation table in the form of a cartouche, four eye amulets with the black eyebrows and pupils, and one with the details incised.

No. 2 is the more usual quality of table of offerings.

No. 3 is a tomb group from grave 69, which contained a great deal of pottery, but unfortunately none of it of dated shape, therefore it can only be said to be of the xxiii–xxvth dynasty period. With it were also found the beads and amulets figured in the plate devoted to these objects, pl. xxxii, no. 3. The group consists of a heavy grey granite mortar, two bronze dishes, a bronze simpulum, and a bronze mirror. The large beads were of pale greenish blue glass, with three groups of dark blue spots on a white ground, and also a plain one of pale blue, and the small beads were both pale blue with single dark blue spots outlined in white, and this again with a thin brown stripe, or of white with single dark blue spots, each outlined in one or more thin brown stripes. There was also a curious clumsy bead of bad pale blue glass covered over with white and yellow knobs. The eye amulets were of the three classes then in fashion, bright blue with a raised eyebrow and pupil

in black, and blue or pale green with the details incised, and blue with all the details marked out in blobby ridges of black. This corroborates the inference drawn from the grouping by means of the pottery in sect. 59, and shews that these types are contemporary.

Nos. 4, 5, 6, belong to the tomb group K.A. 34, and have been described in the previous section.

No. 7 is a jar in the mouth of which was set a saucer full of fine blue eye amulets. They were by far the finest group obtained and the most numerous. This collection was found on the ground in the corner of a room, in the only building discovered in the cemetery. It was right in the middle of the graves of this date, and it seems difficult to avoid the belief that this was the undertaker's house, and this his stock of amulets for sale to his clients. Nothing else was found in the house, and some of the later large wells were cut in the courtyard. The plan will be found on pl. xxxiv.

64. Pl. xxxi, no. 1, has been described above; no. 2 is the hieratic inscription along the foot of a coffin of this period; no. 3 is the inscription from Merneit's coffin, copied in line drawing for the sake of clearness. The genealogy is contained in the third column and has been treated in sect. 61.

Pl. xxxii shews the beadwork and amulets of the period; nos. 1 and 2 shew the way in which they were worn threaded on strips which were tied in a bundle, or else simply tied to a string round the neck. In no. 1 there are five eye amulets and a glaze figure of Isis and Horus all threaded on a string. To other strings are attached little bundles, each of which is composed of a roll of papyrus, on which a charm has been written, and the whole has been tied up in thread, which, being wound round and round many times, made a little cylindrical case; another will be seen in no. 2. In the middle of no. 1 is a string amulet made by winding thread over a core. The men knew it at once, and said that the wise man in making it repeated the spell, binding the thread meanwhile, and so on until finished. This made a very potent charm. Several more are seen in no. 2. To the right of this again is seen a large animal's tooth, which has been bored through and hung on string. Another similar bundle had a large canine tooth, perhaps of a dog or jackal. Below this is the group of eye amulets and beads found loose with the group. Those on the left are blue with pupil and eyebrow raised in black, and the others are green with the details incised. It was very noticeable that all the eyes, which only had details on one side, were right eyes. No left eye was found; those which appear to be such in the photograph are patterned on both sides, so that the one piece of faience represents both a right and a left eye. Above these are a bad Isis and Horus figure, an Anubis figure, both in glaze, and a few cowries, the method of wearing which will be seen in fig. 2, where is also an imitation cowrie in blue paste. The domed back has been cut off these shells to facilitate the threading. The figure of the cat is a survival from the Bubastite age. Near the bottom right-hand corner are two pig amulets in blue glaze, and above them a scaraboid pendant, the back of which is ornamented with a lotus-flower and an eye. The base is uninscribed. No. 3 has already been described, and no. 4 is a beadwork mask, necklace, and winged scarab; all part of the beadwork covering of a mummy. This type of decoration is very common at this period, the covering being made of a network of beads, either long tubular or else small ones, and into this were worked special details such as the above, and the winged figure of Nut, the four Genii of the dead, or the two jackals. These jackals represent Anubis the Lord of Mat-Hor (Road of Horus, Gardiner, *Sinuhe*, l. 242) and Horus, the Lord of Ḥebennu (Maspero, *Le Rituel de l'Embaumement*, p. 43, part of *Mémoire sur Quelques Papyrus du Louvre*, and published in *Notices et Extraits des Manuscrits*, tome xxiv, i^re^ partie, 1875), which should be put, Anubis on the right leg and Horus on the left. These details were worked in small coloured beads used in pairs, each bead of which was half as wide as it was long, so that a pair made a square.

Pls. xxxiii, xxxiv, shew the pottery which has been largely treated in sect. 59. Besides the pottery found with the definitely late Greek ware, which has been discussed in sects. 60, 61, 62, are also found at Defenneh, *Tanis II*, pls. xxxv and xxxvi, nos. 72 and 98. They therefore also last late. With nos. 4 and 5 were found nos. 1, 3, 18, 41, 42, 70 and 71. No. 41 having a handle seems to shew a foreign influence, and no. 71 is un-Egyptian-looking. The set of little pitchers 60–69 and its bearing on the dating of the cemetery has been discussed in sect. 59. No. 72, a pitcher of un-Egyptian shape with Greek letters on it, was found with the pottery stand no. 30, and shows that Greek influence had spread as far south as Kafr Ammar by the end of the xxvth or beginning of the xxvith dynasty.

At the bottom of plate xxxiv are found the plans of the tomb K.A. 34, and of the house in the middle

of the cemetery. They have been discussed in sects. 62, 63.

65. Pl. xxxv gives the plan of a large and very perfect building, which was discovered on the face of the hills forming the eastern edge of the desert. This building appears to be a temple, as it has two stone niches or shrines at the back. The walls still stood to a considerable height, as will be seen in pl. xxxvi, fig. 1. It was built entirely of crude brick; the bricks being of a large size. Here and there a course was laid on edge, as it were a single course of herring-bone pattern. The shrines were lined with dressed limestone slabs, having a step of limestone still remaining in front of each. The building is very symmetrical in design, the eastern half corresponding to the western. The whole, however, has been thrown out of balance by having to accommodate itself to a large boundary wall, which was in the way, hence the eastern half is thrown further back to the north than the western.

The building was divided into two main parts:

1st. The outer, which is common to both of the shrines, and which included a long approach to each.

2nd. The inner, which was again subdivided into two sets, comparable to each other, each being composed of a small shrine, opening from a vestibule, and a couple of small rooms.

This inner part was separated from the outer by a division wall running right across the building. This wall is pierced by doorways only to connect each of the long approaches of the outer part with the vestibule of the inner part.

Unfortunately nothing whatever was found in the building to give a clue as to its use and very little to date it, for only two large pots of the xxiiird–xxvth dynasty style were found. These were lying on the floor of the west shrine (pl. xxxvi, fig. 4), and were full of ashes. In the filling of rubbish the little glaze figure of a man carrying a gazelle came to light (see pl. xxxvi, 2).

The whole building fell into disuse at a later time, and then in the outer part the two doorways opening from the central rooms on to the west approach were blocked up. However the doorway, which opens from these central rooms on to the eastern approach, and also the entrance to this approach from outside, were left open. Hence it appears that the centre of this outer part was used as a dwelling-house, the entrance to which was from the east. The doorways of the inner part had also been blocked up, but this seems to have been done from another motive. This was to secure the graves, which had been dug in the floor of the chambers, by blocking up the only approach to each of them. The burials were late, being extended on the back, and without coffins or tomb furniture. In the right-hand bottom corner is seen all that was left of a very thick wall of crude brick built against the face of the hill, forming a boundary wall. Unfortunately the rest of it had entirely disappeared, having been no doubt carried away for building purposes. This wall must be older than the temple itself, since the temple has been so planned as to avoid it—to the detriment of its own symmetry.

66. Pl. xxxvi, fig. 1, is a general view of the building taken from the south. On either side are seen the long approaches, or corridors as they might be called, and under the arrows are the shrines. These are shewn separately in figs. 3, 4, 5: fig. 3 being a view looking up the eastern approach, and no. 5 being a near view of the eastern shrine itself. As will be seen, it is raised some 3 feet above the ground, and was not ascended by a flight of steps, as was the western one. Hence it was so arranged that a good view of the interior was obtained by any one standing in front of it. No. 4 is a view of the western shrine, also taken looking up its approach. The two jars are here seen in place. No. 2 is the blue glaze statuette of the man carrying the gazelle. No. 6 does not belong to the temple, but represents an ancient mat, which was found in one of the xxiiird–xxvth dynasty graves, photographed for comparison with a modern mat (*hasyra*) bought in the market for use in the house. The mat which lies on top is the old one, and that projecting from underneath is the modern one. The technique is exactly the same in both, the whole being woven on cords, which are afterwards plaited together forming a kind of selvedge, and then the loose ends are tied in a knot at the right-hand corner. The material of the two differed, for the ancient mat was made of rushes, while the modern was made of a strong, hard substance like halfa grass.

CHAPTER XIV

PTOLEMAIC AND ROMAN GRAVES AT KAFR AMMAR AND ATFIEH

By ERNEST MACKAY

67. SCATTERED about the desert at Kafr Ammar were various Ptolemaic and Roman graves, twenty-

nine in all being opened. Twenty-six out of this number were found to have been anciently robbed and their burials broken up, and therefore will not be dealt with in this chapter, with the exception of grave 242. The graves were of two kinds: I. Family graves in which rough chambers were cut in the side of a hill to hold from two to six, or more, bodies. II. Single burials placed at the bottom of a rough hole, or in a chamber provided to take only one body. The orientation of the bodies was not constant, as is usual in this period, and frequently bodies in the same chamber were placed in different directions.

A feature in many of the graves was cist burial. These cists were always well cut in the soft rock and roofed over with slabs of local stone carefully cemented down. They were excavated in the floors of the chambers, or at the bottom of rough hole graves.

Grave 99 (Roman) was undisturbed. It contained a female body with head to the west and facing upwards. The attitude was in a straight position on the back, with both hands placed beneath the hips. A gold ring (pl. xxxix, 24) much worn was found close to the left hand, a white stone bead (23) on silver wire was worn as a pendant, and a necklace of gold was around the neck (pl. xxxix, 22).

Grave 237. Ptolemaic. In this grave was laid a male body with head to west and facing north. The position was straight on back. The body, which was wrapped in a light linen shroud or garment, was laid in a cist cut at the bottom of a rough hole, measuring 87 inches on N. × 56 inches on E. × 53 inches deep. The dimensions of the cist were 71 inches on N., 19 inches on E. × 24 inches deep; it was carefully covered over with slabs of stone, the joints being filled in with cement. A chaplet of bronze leaves and berries, heavily gilt, was in position around the head (pl. xxxix, no. 32). At the feet were two sandals, with leathern soles and network uppers of the same material. These were secured to the ankles by leathern thongs. Two small pottery jars, each with two handles, were lying close to the feet (pl. xxvii, nos. 35 and 36). At the north of, and above, the cist upon a ledge was lying an iron reaping-hook with a wooden handle (pls. xxxvii, 1, and xxxviii, 8).

Grave 242 (Ptolemaic). This consisted of a chamber measuring 84 inches on N. × 55 inches on E. × 46 inches high. The entrance to it was formerly sealed up, but plunderers had broken down the upper portion of the walling and entered the grave. Curiously enough, though articles of value were left inside the chamber, yet the bones of the burial were found to have been completely removed. Inside the chamber was a large black *crater* (pl. xxxviii, 13), two small *canthari* (6, 7), and a small black pottery dish (3). With these was a carved horn of an ox (1) and a long alabaster jar (2).

68. During a brief stay at Atfieh, which is situated on the eastern bank of the Nile about forty miles south of Cairo, a finely painted Ptolemaic tomb was unearthed and copied. The tomb, which was constructed of limestone throughout, was 15 feet 5 inches long × 12 feet 10 inches wide × 9 feet 9 inches high, with a vaulted roof. The spring of the arch was 38 inches from the pavement. The doorway of the tomb was 6 feet 10 inches wide, 6 feet 3 inches high, and 32 inches long, and was found blocked with large rectangular pieces of stone (pl. xl, no. 1). One of these pieces was found to be inscribed, and is shewn on pl. xl, no. 7. The tomb had been entered anciently by means of a small square hole in the top of the roof, which can be seen in the photograph. When the sand that partially filled the interior was removed, a deep well was seen in the stone pavement measuring 95½ inches long × 43 inches wide × 57½ inches deep. This was provided to take the burial, which had, however, been entirely removed with the exception of a few small bones. Lying alongside this well was a roughly dressed limestone cover, 10 feet 7 inches long × 5 feet 3 inches wide × 18½ inches thick at the edges, and 21 inches thick down its axis. As far as we could see the cover had never been placed in position upon the well.

The pavement of the tomb was of thick limestone blocks, some of these being inscribed on their underparts with the cartouches of Rameses II. A portion of a bas-relief figure of the same king was also found among the paving blocks, shewing that a building dated to the xixth dynasty must have been somewhere in the vicinity. Tracings of this tomb will be found on pls. xli–xliv. Unfortunately the stucco face of this stone, which bears the painting, peels away very readily, so that it is impossible to remove the tomb and preserve it.

CHAPTER XV

OLD KINGDOM DAM IN WADY GERRAWY

By ERNEST MACKAY

69. An examination was made by me of the stone dam, first discovered by Dr. Schweinfurth, which is situated seven miles to the east-south-east of

Helwan, and about twelve miles from our camp at Shurafeh. This structure is marked in the Government map as being placed in the Wady Gerrawy, but the name given to the gorge by some of the local Bedawin is Wady How. The dam, which is not distinguishable until you are close to it, was placed across a wide ravine cut in the bottom of the valley, running east to west. Later floods have entirely washed the structure out of the bed, and only left the ends of the dam at the two flanks. The arrows on pl. xlvi shew the direction of the stream. The construction measures about 380 feet across the valley at the top, 33 feet high, and 280 feet thick from east to west. The eastern side, which upheld the water, pl. xlvi, no. 3, was faced with limestone blocks of very poor quality averaging 34 inches in width, and 11 inches in height. These are placed in level steps which resemble at present the sides of one of the pyramids. The quarries from which the stonework was extracted for the dam are to be seen on both sides of the ravine, east and west of the structure. The dam was not built of solid stonework throughout, but consists of two masses of rough masonry, the space between which was filled up with rubble. This filling will be seen in the section shewn of the dam lying between the two white crosses, pl. xlvi, 4. The thickness of the upside or eastern construction, shewn in the view 4, is 83 feet, then comes 113 feet of rubble, X to X, followed at the downside or west by another 84 feet of construction.

A cut through the middle of the dam has been entirely swept out by exceptional floods, removing the material down to the level of the floor of the ravine. Not a vestige of the destroyed portion is to be seen near what remains of the structure, as later rains have washed the *débris* to a considerable distance. The width of the wash-out or space between the northern and southern portions now measures 145 feet.

70. West of the structure and on the northern side of the valley are still to be seen the remains of the rough stone huts of the builders and users of the dam (pl. xlvi, 2). These are constructed solely of rough stones placed one on the other, no mortar being used. A rough calculation made by one of the natives with me shewed that the huts would accommodate about 200 men, if they were all in use. Some of the walls of these shelters now stand up to two feet high, but the majority are mere heaps of stones.

On the top of a low hill just above what remains of the huts is a nearly square enclosure similarly constructed of rough stones, and measuring 88 feet on the north, 80 feet south, 75 feet east, and 70 feet west. The walling here averaged 2 feet in thickness, and stood in places 3 feet in height. Inside the enclosure were other walls, parallel, and close to, the outer one, forming a kind of narrow road all the way round inside. It is possible that the centre of the enclosure was used as a kind of storehouse to hold the bread and tools of the workmen, while guards slept or patrolled the narrow passage that ran round it. No entrance could be defined in the outer, or inner walling, as these have been in many places denuded down to the level of the desert floor.

I was fortunate enough to find several pieces of pottery in this enclosure, and in some of the huts of the workmen, which definitely date the structures as belonging to the Old Kingdom. The forms were characteristic of the iiird—ivth dynasties, being of rough hand-made pottery with a slight recessing at their necks similar to some of the pottery found at Meydum in 1892 (*Medum*, pl. xxxi, no. 19). No traces of pottery of a later date were found in the vicinity. On the southern side of the valley, as one walks south-east, is to be seen a well-worn path with scraps of Old Kingdom pottery scattered on each side of it.

71. This path, if followed for about two miles, will be found to lead to a large alabaster quarry situated at the head of the valley. This quarry is some distance above the bed of the wady, and has numerous stone shelters close to, and just below it. Some of the walls of these shelters are still in very fair condition. The alabaster that remains at present in the quarry forms a thin facing to the limestone rock on the southern side of the valley, and is dark in colour and of poor quality. The quarry appeared not to have been exhausted, as far as I could see in the limited time that I had at my disposal.

Several pieces of Roman pottery were found lying on the surface of the ground near the shelters, but it is difficult to conclude from this that stone was taken from here in Roman times. The late pottery was probably left behind by searchers for gypsum, which substance has been, and is now being, extracted from the surface soil on the top of the cliffs. No other pottery later than the ivth dynasty was seen with the exception of the above, though carefully looked for.

Several trial pits dug in testing ground for alabaster were found close to the narrow path

leading to the quarry, and near by one of these was found an Old Kingdom offering jar just roughly hacked out of a small block of stone. It is probable that the blocks of alabaster as they were quarried were brought west to the mouth of the valley either swung from poles carried by men, or by the aid of donkeys, for the path in many places was much too narrow to admit of a sledge being drawn along it. It is possible of course that the ravine in the bottom of the valley was capable of holding sufficient water in some seasons to admit of the stone being floated down on rafts as far as the dam. This however is unlikely, as it would involve lifting the blocks at the end of the journey either right over the dam, or up to the level ground on the southern side of the ravine. I unfortunately could not estimate how much water the dam was capable of holding up, as I had no means at my disposal of comparing the level of the top of the dam with the bottom level of the valley at its head.

Judging from the way in which the bed of the ravine has been scored, the water must pour down it in a tremendous volume after an exceptionally heavy rainstorm. Just before I first visited the place we had had an hour's steady rain, and two days after the occurrence the lower, or western, portion of the valley had still in it a considerable amount of water in the shape of broad and shallow pools.

CHAPTER XVI

SHURAFA

By R. ENGELBACH

72. THE first excavations of the season were undertaken on the site of the Roman ruins near the village of Miniet-esh-Shurafa, Mr. Mackay being in charge of the camp after Prof. Petrie left, and Mr. Elverson assisting in the work.

Shurafa is situated near the edge of the cultivation, which at this part is about 4 miles wide, on the east bank of the Nile, and almost opposite to Mazghuneh. Helwan lies about 8 miles to the north. The map on pl. xlvii shews the relative positions of Shurafa and the ruins.

Although no inscriptions giving the name of the town were discovered, Prof. Petrie considers that it is the "Scenas Mandras" of the Antonine Itinerary, which gives the following figures:

Babylon (Old Cairo) to Scenas Mandras, 12 Roman miles.

Scenas Mandras to Aphroditopolis, 20 Roman miles.

We know that the distance from Old Cairo to Aphroditopolis (Atfieh) is about 42 miles (the Roman mile being very little different from the English mile), so we see that there is an omission of 10 miles, which is an error which often arises in the Itinerary. If this deficit were added to the distance between Scenas Mandras and Atfieh, it would make the position of the Roman camp close to Helwan, but we know that there are no Roman ruins there. If, however, we add the 10 miles to the distance between Old Cairo and Scenas Mandras, the site of the latter is brought almost exactly on to the ruins of Shurafa.

There are no evidences that Scenas Mandras was in existence prior to Roman times, and no objects were found, *in situ*, of an earlier date. This is further borne out by the name which the Romans gave it: Scenas Mandras, or perhaps more correctly, Scenae Mandrorum, *i.e.* The Tents of the Enclosures.

Founded shortly before the third century A.D.—as no earlier remains were found—it became the quarters for the regiment called *Ala Septima Sarmatorum* —the Seventh Wing of the Sarmatians (Parthey's Map). Sarmatians was the Roman official title for the Gothic mercenaries; the *Notitia Dignitatem* gives a list of the stations occupied by them, which were chiefly in North Italy, but in no case can I find a record of the remains of a fortress which might be attributed to them. Later, the town is mentioned as the seat of a bishopric, under the name of Scenē Mandrōn. From the objects found, it appears to have continued down to the twelfth century.

73. Parthey, in his *Erdkunde des alten Aegyptens*, states that it was a common custom to appoint a bishopric on the site of an old temple, converting the temple to meet the requirements of a Christian church. With the object of finding out if it had been the case in this instance, several deep trenches were dug, and the town searched well for earlier remains. North-west of the town a large granite block was found, inscribed with the cartouches of Ramessu II, weighing about 9 tons. It was lying on a foundation of small limestone blocks, some of which were inscribed with raised hieroglyphs of the xiith dynasty, the whole having probably been used as a threshold. Among the house ruins in the south part of the town was found a limestone stele, about 4 feet by 2½ feet, with a rounded top, representing a figure making an offering to Ptah. The stele was very much weathered, the only recognisable hiero-

glyphs being *Sat Tut-Amen*: 'The daughter of Tut-Amen.' From the dress of the figures it appears to have been of the xviiith dynasty. The dating is confirmed by the fact that one of the titles of Thutmes III in the temple of Karnak is *Ra-Men-Kheper-Tut-Amen*, and it was a common custom to name a child after one of the king's titles. These stones, together with a large quantity of granite blocks re-used for millstones, etc., were the only objects of an earlier date than the Roman occupation. They were probably brought from the tombs and temples of Aphroditopolis and Memphis.

74. The town, pl. xlviii, is about 2,020 yards in circumference, roughly oval in plan, and enclosed in a wall which is still fairly continuous. This circuit wall was not a strong fortification, as it never exceeds 4 feet in thickness. In emergency, however, the inhabitants could have taken refuge in a small, but exceedingly strong, fort which was discovered by Prof. Petrie in the south-west of the town.

Most of the Roman and later stonework in the town has disappeared, and there is ample evidence that it was burnt for lime. The fort, being the principal structure, has naturally suffered most, with the result that the chambers within it have been almost entirely destroyed. The fellahin have largely destroyed the buildings by digging *sebakh*, and continued to do so, to our great inconvenience. This *sebakh* industry has been going on for a great number of years, and has done much to ruin the archaeological evidences. After a few weeks' excavating, however, we were enabled to trace the walls of the fort, together with some of the houses which abut on to them (see pl. xlvii).

75. The fort is roughly rectangular, about 350 feet by 180 feet on the S. side, and 160 feet on the N. side. The walls are double, and are reinforced at intervals by cross-walls, and strengthened at the corners by bastions. The space between the walls seems to have been intended for store-rooms. The bastions are not built to any uniform plan, and they differ considerably one from another. On the E. wall of the fort two extra bastions were placed; the probable reason was that as the houses of the town were close to the fort on that side, an enemy would choose their cover to attack the fort; thus it was necessary to be able to sweep the E. wall from end to end by archery. The walls were built on a foundation of rough stones; under the N.W. bastion, which has been almost destroyed, the foundations were exposed, and they consisted of large blocks of unworked limestone, with the exception of the corner one, which was an old millstone.

The curious feature of the fort is that there does not originally appear to have been any door, although several openings had been made in later times. This is proved by the fact that on digging beneath the opening, the walls invariably continue without a break at a much higher level than the floors of the houses. All the Roman forts we know had gateways and were generally rounded at the corners, and, further, the shape of the bastions is not of a Roman type, but was introduced in Byzantine times. The fort was probably built by the Roman mercenaries who we know were stationed here.

A foundation sacrifice was found 4 feet beneath the E. wall in a chamber 84 × 28 inches. This lay 80 feet from the S.E. bastion. The remains were in a very bad condition, and appear to have been the bones of a camel. The chamber runs in under the wall for 45 inches. The bones of a sheep, which may or may not have been a sacrifice, were found near the S. wall, 71 feet from the S.E. bastion, in a hole 2 feet away from the wall and as much below the level of the bottom of the wall. The hole was 34 inches across. No pottery of any kind was found with these bones.

On the west side of the fort, and running out of it at right angles to the wall at the level of its foundations, is a plaster channel-drain about 18 inches wide. It could not be traced inside the fort, as the course of it has been destroyed. Outside it runs into a circular pit 4 feet across and 25 feet deep, lined with burnt brick. A well seems unlikely outside a fort, so it may possibly have been a cesspool.

76. The main cemetery of the town is on the north side. The graves are not nearer than about 75 yards from the circuit-wall. The cemetery extends the whole breadth of the town and is about 100 yards wide. Graves were also found in considerable numbers on the south side of the ruins, but the majority of these have been swamped by a modern canal. A few were found to the west, but none at all to the east, although we searched the desert for at least two miles distant. The graves were about 5 feet deep; the body was laid in a recess at the bottom of the shaft, and a board placed in front of it, so as to prevent the sand from covering the body when the grave was filled in. Some of the graves had a rough brick lining, and traces of coffins were found in many cases. The wood was in a very bad state, quite different from the excellent state of the

far more ancient woodwork of Tarkhan. The bodies were laid at full length on the back, and large quantities of objects, such as dice, terra-cotta figures, bone carving, and beads, were buried with them. Some of the graves contained as many as six bodies, packed as closely as they could go; and the number of children's bodies was proportionately very great.

No cases of dismemberment were observed.

Many of the graves had been plundered anciently, and there were evidences that modern native dealers had been prospecting for some time past.

The supposition that this town contained a garrison is strengthened by the great proportion of fractured bones which occurred in the cemetery. A large selection were brought home, and have been examined by Dr. Derry, Curator of the Anatomical Museum at University College. A report of some of the skulls and also that of a very abnormal skeleton will be found in the next chapter. I took field measurements of 100 burials. A tabular list of these will be found with the reports of Dr. Derry.

The absence of weapons in a Roman garrison cemetery is accounted for by the fact that all accoutrements were the property of the State, which would not allow them to be buried with the soldiers.

A large ash-heap to the east of the town, which shewed traces of fibrous material, was entirely turned over in the hope of obtaining documents. The papyrus found was very coarse, and mainly uninscribed. The inscribed fragments were mostly in Arabic, though we found a few in demotic. A larger fragment of a thick paper business-letter of the tenth century was found at the top of the heap (see pl. xlvii), and this, together with the fact that very little was found of a much later date, shews that the town only existed about 800 years. The other finds in the ash-heap included Arab weights, bone carving in great quantities, and a gold earring set with pearls. These are described with the plates.

About 3 miles to the north of Scenas Mandras a small Ptolemaic cemetery was discovered at the edge of the cultivation. The burials were of a poorer quality than either those of Atfieh or Kafr Ammar. The bodies were laid on the back at full length, without any coffin. The objects found with the burials included a pair of plated gold earrings, two *canthari* (pl. xxxviii, 4, 5), and a considerable number of two-handled, flat-lipped pots of the common Ptolemaic type.

77. The specimens of carved bone found in the graves and in the large ash-heap of Shurafa bear a very strong resemblance to those found at Saqqara, and some examples agree so closely that it is certain that they come from the same manufactory, if not from the same hand.

It is generally admitted that the Saqqara carving comes from Alexandria, and that it is not of local make (see LAURENT, *Ivoires Prégothiques*). So it is certain that if the city of Memphis did not do its own ivory carving, the comparatively unimportant Scenas Mandras would not have done so. Further, there is no reason to suppose that Memphis and Scenas Mandras were in very close communication, as they are on opposite sides of the Nile, and as far from the Nile as possible, so it is probable that the Alexandrine school supplied all the towns of Middle Egypt. Another point which bears out this view is that although the bone carvings from Shurafa bear so strong a likeness to those of Saqqara, the pottery models do not, judging from the rather fragmentary publications of pottery from the latter place. It is not likely, if there had been much communication between the two towns, that the bone carving alone would have been copied.

78. Pl. xlix, fig. 3. Part of a female figure. The right breast is bare and the clothing is of typical Greek form. Around it are fragments of the bordering which surrounded it. This carving, and most of the others, were originally on caskets, but the wood has in all cases rotted away.

Fig. 4. Bone figure of a woman holding up a wreath in her right hand, while the left hand is raised and touching the shoulder. At her feet are two tambourines. The head and especially the hair is very well carved, but the whole of the lower part is rough.

Fig. 5. Figure of Dionysos, from the same casket as the preceding example. This is of much finer work, representing the god leaning on a pillar with a panther crouching at his right side. His hands are holding draperies which hang across his middle. Above the pillar is seen a bunch of grapes. The twisted pillar did not come into common use until the fifth century A.D., although it is known as early as the sixth century B.C. at the Acropolis of Athens (see STRZYGOWSKI, *Cairo Catalogue*, pl. xiii; and LAURENT, *Les Ivoires Prégothiques*, p. 7). Thus it is seen that the relief carving is of a later date than the incised carving, as in pl. xlix, fig. 33, and the fragments from the ash-heap. Around nos. 4 and 5 is a part of the border which surrounded the panels.

Fig. 6. Bone toilet (?) article of unknown use from a grave in the north cemetery. Three of these were found, two with the figure on the handle, and one plain.

Figs. 7–27. Bone hairpins of Roman or Coptic date.

The pins were found in great quantities, and vary from the coarsest workmanship, as in no. 16, to extremely delicate work, as in nos. 10 and 22. The rest are all of well-known types (see STRZYGOWSKI, *Cairo Catalogue*, p. 204).

Fig. 28. Bronze hairpin with ivory head. Although many bronze pins were found, this is the only instance of ivory being fitted on to metal.

Fig. 29. Ornamented spindle whorl. The type usually found was simply an unornamented disc of ivory, with the remains of iron in the hole.

Fig. 30. Specimen of wood carving from the ash-heap east of the town.

Fig. 31. Piece of bone carving from the ash-heap. A very great quantity of this was found, some of which appeared to be from caskets, whilst others seem to have been merely trial pieces. It is probable that some of these are local attempts to imitate the Alexandrine importations.

Fig. 32. Carving of a reclining woman resting on a pillow or perhaps a rock. It is incised and not in relief, and is far cruder than nos. 4 and 5 of this plate. An example is given in the *Cairo Catalogue*, pl. xiv, which is almost exactly similar, and is dated to the third to fourth century A.D. These trapezoid pieces were the panels at the top of the casket, figs. 33, 34. The sides of the caskets have three panels: a square one in the middle, and two oblong panels on either side of it. They are originally enclosed in a bone bordering.

The two examples of these oblong panels are of a well-known type, and are shewn in the *Cairo Catalogue*, pl. xiv, nos. 7075 *et seq.*

Fig. 35. Specimen of bordering from a casket. It is almost identical with that given in STRZYGOWSKI, *Cairo Catalogue*, p. 199, no. 8862. It is dated as the sixth to seventh century A.D. It is from the ash-heap to the east of the town.

Figs. 36, 37. Specimens of bone bordering from the ash-heap. The combination of sprigs of five leaves and of three leaves is a feature of the Alexandrine carvings found at Saqqara, and is dated to the sixth and seventh centuries A.D.

79. Pl. l, fig. 1. Nude figure of man holding a basket of grapes in his right hand, while his left hand is raised up to his shoulder with the forefinger raised; the muscles are well outlined, but the carving appears to be unfinished.

Fig. 2. Figure of a Maenad holding a tambourine in the right hand, and having another tambourine between the feet. In her left hand she holds the end of a piece of drapery which passes behind her and hangs over her right shoulder. The bone is yellow and polished.

Fig. 3. Figure of man holding a bunch of grapes in the left hand, his right arm being raised above his head. This piece is inferior to the two foregoing examples, both in design and in finish.

Fig. 4. Fragments of a carving, originally on a casket, representing a nereid being carried off by a triton. The figure of the triton is horned, and holds a large shell over his chest. The right hand of the nereid is holding the triton's shoulder, and her left hand is on her hip. The fragment at the broken corner of the carving appears to be some kind of tail, but it is not certain whether or not it belongs to the piece.

Fig. 5. Fragment representing a nereid riding on a triton.

Figs. 6, 7, 9, 10. Pieces from the borderings of the caskets, to which the carvings of this plate originally belonged. They appear to have been coloured, but, with the exception of a few green patches on them, the colour has disappeared.

Figs. 8, 12, 13, 14 and 15. Fragments of a carving which has been too much damaged to restore. All the carvings of this plate are in relief, except the fragments of bordering. They are part of a large tomb group. The other objects consisted of two bone toilet boxes, 2·2 inches and 2·5 inches high respectively (both broken); three bronze pins; and a circular wooden box and cover containing a roughly cut cameo (pl. lii, 7), and the following glass imitations of stones:

6 glass, cut half-pear-shaped and transparent.
1 „ „ green colour.
1 imitation beryl.
2 cut like brilliants about ½ inch across.
3 others of various shapes.

All are from a grave in the north cemetery.

80. Pl. li, fig. 1. Cover of a casket made of horn. It was originally painted yellow. In the centre is a dolphin, and the edges are ornamented with scroll work.

Fig. 2. Figure of a man holding either a tambourine or a discus in his left hand, and with ivy

leaves in his hair. The work is in low relief, and is very coarse.

Fig. 3. Design from the side of a casket representing two cupids holding up a wreath, in the centre of which is a branching cross with two lobes in each angle. Flowers are growing behind the cupids of the kind usually met with in similar work from Saqqara, and the design of three small circles in a triangle which is seen under the hands of the cupids is quite typical of this kind of carving. The date is most probably of the fourth to sixth century A.D. The design of this is not in relief, but the outline is incised, and any parts to be coloured were cut out and filled in with coloured paste. The wings were originally red and the mantle green. For similar types see STRZYGOWSKY, *Cairo Catalogue*, pp. 176, 177, and *Hellenistic Work*, p. 18.

Fig. 4. Lower part of figure of a dancing girl. The work is of the same style as the preceding number. See *Cairo Catalogue*, p. 178, no. 7069.

Fig. 5. Three bone rings. Such were found in all the graves in great numbers. Some of them were obviously intended for rings, but the great majority found with adult bodies were too large for rings and too small for bracelets.

Figs. 6, 7 and 8. Fragments of bordering from caskets. They appear to have been filled up with coloured paste similarly to nos. 3 and 4. No. 6 still retains traces of green colouring.

This tomb group also contained two rectangular sheets of horn, 10·3 × 3·8 and 7·6 × 3·8 inches respectively.

Plate lii, fig. 8. Bone carving from a grave in the north cemetery representing a bird and some lilies. It is of the same type as pl. li, 3, 4; the design having been incised and painted green and red. This style of carving is of the fourth to sixth century A.D., and the piece was originally one of the outside panels on the side of the casket.

Fig. 9. Fragment of bordering from casket belonging to no. 3.

Figs. 10–13. Rough carving from a grave in the north cemetery. It is probable that these are local attempts at copying the Alexandrine carvings, as they were never on a casket but laid together near the head of the body. The positions of nos. 10 and 11 are frequently observed in figures of Apollo.

81. Pl. xlvii. Limestone stele from the cemetery south of the town. The inscription reads

ΜΗΛΟΙΠΤΟΥCΕΡ | ΕΝΟCΟΥ | ΔΙCΑΤΑΝ

Mr. Milne is of opinion that in spite of the illiteracy of the Greek, it is not later than 300 A.D. It appears to be an attempt to spell a corrupt dialect of Greek phonetically. The probable division of the words is *Μὴ λύπῃ Σερῆνος οὐδείς ἀθάν(ατος)*, "Do not grieve Serenus, no one is immortal."

Pl. xlvii. Fragment of an Arab letter of the end of the tenth century A.D., found on the ash-heap on the east of the town. It has been submitted to Prof. Margoliouth of New College, Oxford, who reports that 'it is a fragment of a letter from a brickmaker to one Muhammed Abu Yaḥya. The first line is the ascription (In the name of God, etc.) and the second and last lines are compliments. He hopes that the delay in answering a former letter may mean no harm. He has sent in a small load the specimen. . . . A letter has reached him from Al-Aswân to the effect that he has been sending you a red brick and hopes you would approve the red brick which you would use for building round the well . . . but if you use any of it for the old gateway of the house you had better mix them with some of *my* bricks. . . .'

On the back there is an erased business letter.

82. Pl. xxxviii, 1, 2. Ptolemaic *canthari* from the cemetery north of Scenas Mandras. These are of a similar kind to those of Kafr Ammar, but are of much finer workmanship, and are decorated with a floral design of brown and white. Both have been very much spoilt by the salt in the soil, which has burst off the black face, thus showing the red pottery below.

Pl. xxxix, 25. Plaster head of Pallas from the north cemetery. The body was too much crumbled to be preserved.

Fig. 26. Plaster figure from the south cemetery. A large quantity of pottery figures were also found in the graves, the usual type being a nude female form, with very short arms raised upwards, and a kind of halo behind the head, which is either smooth or indented. Full-length figures were more common than busts, but the latter shewed better workmanship. Other figures of men on horseback, horses and dogs were common, but there was no example of pottery Harpocrates. The pottery found at Scenas Mandras all has a strong resemblance of type, and is almost certainly of local make, as the most common full-length female figures do not occur in the near vicinity, so far as I can gather from the publications of Saqqara, etc. The figures cannot be defined as any particular goddess, but they probably represent a composite local divinity.

Fig. 27. Small Roman glass bottle from the north cemetery.

Figs. 29, 30. Two lamps of grey soapstone from the house abutting on the eastern end of the north wall of the fort. No. 30 has a handle, and is quite open and plain, but no. 29 has lines cut in it as shewn in the figure, and is covered over at the apex for the wick. The triangular form of lamp is of Byzantine date.

Fig. 31. Pottery model boat (?) from the house ruins of Scenas Mandras. It resembles a lamp, but the wick hole is much too large, and there are no signs of burning around it. The other opening is also unnecessarily large, and would let the sand into the oil if it were used as a lamp.

83. Pl. xlix, 1. Fragment of crystal, possibly a handle of a tray. It is of octagonal section and very accurately cut. Found in a grave in the north cemetery (Roman).

Fig. 2. Crystal and bronze buckle from the north cemetery, of Frankish origin.

Pl. lii, 1. Amulet from the cemetery south of the town. It is of green and blue glaze and of a form which is not known in Coptic and Roman graves. It appears to be a *za* sign of the xxvith dynasty.

Figs. 2, 3. Gold earrings from the Ptolemaic cemetery about three miles to the north of Scenas Mandras. The gold work is hollow and the loop plated.

Fig. 4. Gold earrings set with a piece of bluish quartz and small pink pearls; found in the ash-heap to the east of the town.

Fig. 5, 6. Pair of Roman gold earrings from the north cemetery.

Fig. 7. Cameo from the north cemetery.

84. Pl. lii, 14. Coptic limestone capital from the house ruins in the east of the town. The combination of leaves and lattice-work is typical of Byzantine times, and Strzygowsky, in his *Cairo Catalogue*, gives an example of one with a similar motive as of Byzantine origin, and dates it to the time of Justinian.

A very similar example is given in *The Excavations at Saqqara*, 1907–1908, by J. E. QUIBELL, pl. xxix, no. 3.

Figs. 15, 16. Parts of Coptic cornices from the house ruins north-east of the town representing leaves and fruit. Figs. 14, 15, 16 are now in the Christian Department, British Museum.

The other objects of the cemetery included a very large quantity of beads found with the burials of both sexes; dice and dice-boxes were frequently buried with the male burials, and hairpins and other toilet implements with the female.

Lachrymatories of the usual Roman type occurred fairly frequently, and, besides the bronze described in the plates, a set of six cymbals, a chain made of circular flat links, and several small Coptic crosses were found.

In two cases the necklaces from the cemetery contained a coarse scarab of the xxvith dynasty, which had been found probably at Atfieh, which is about 20 miles south.

Bone dolls, shaped like pegs, of the well-known Coptic type, and illustrated in the *Cairo Catalogue* (Coptic) by Strzygowsky, pl. xviii, occurred in considerable numbers.

85. [I may add here the following readings of the Cufic glass weights, which are published on a scale of 3 : 4.—W. M. F. P.]

17. ABU AL HAZN (see CASANOVA, *Catalogue de la Collection Fouquet*, v, 2).

18. AL QASYM IBN OBEYDALLAH, Minister of Finance, A.D. 737–744.

19. ABD EL MALEK IBN MERWAN, Minister of Finance, A.D. 749. "In the name of God the amyr Abd el Malek ibn Merwan, whom God preserve, has ordered the making of a weight of a fels of 30 kharrubat, by the hand of Yezyd ibn Tamym" (CAS. ii, 27).

20. GHAWTH IBN SOLEYMAN, Minister of Justice, A.D. 751.

21. "By the order of the commander of the faithful, to whom may God be generous," in the centre. As the last phrase occurs on a weight of Muhamed ibn Soleyman, A.D. 905, this is probably about that date. The inscription around begins, "In the name of God, God has commanded exactitude. . . ."

22. The Amyr YEZYD IBN ABDALLAH, A.D. 856–867, a variant of CAS. iii, 56.

23. "He-salam."

The date of Arab occupation shewn by the weights is 740–1000 A.D., agreeing with the letter which is of the latter part of the xth century.

CHAPTER XVII

NOTE ON SKULLS FROM SHURAFA

By D. E. DERRY, M.B, Ch.B.

86. So far as can be seen from an examination of the figures obtained by Mr. R. Engelbach from measurements of the above crania (see pls. liii lv)

they bear out his contention that the inhabitants of this place were not of Egyptian origin.

Although the numbers are comparatively small, they are probably sufficient to give point to the conclusions drawn from the figures. The male skulls are definitely shorter and wider than predynastic Egyptians, and although in regard to breadth of skull they are very close to the Early Dynastic people of Lower Egypt, they differ markedly from these in the height of the cranium. A basi-bregmatic height of only 132·2 mm. combined with a maximum breadth of 138·9 is unknown hitherto in any series of Egyptian crania. In predynastic Egyptians the height is as low as this, but the maximum breadth is also very low, generally less than the height. Thus, if the index $100\ \frac{B-H}{L}$ be calculated for the Scenas Mandras crania, as has been done for a number of races by Prof. Karl Pearson (*Biometrika*, vol. viii, nos. 3 and 4, January 1912), the skulls in question will be found to occupy a relatively high position in the list, the women coming in above xviith-century Englishmen, while the Scenas Mandras men immediately follow the latter. The result obtained from treating measurements on 120 male skulls, of ivth to vith-dynasty date from Giza, in the same way, is to place them below prehistoric English, and next to Egyptian women of about the xviiith dynasty.

It appears therefore that a distinct gap separates the Scenas Mandras skulls from the Egyptian in regard to these measurements, and the same holds good in the remaining cephalic index calculated, viz. the breadth-height $\left(\frac{100 \times B}{H}\right)$ which is higher than that found for Egyptian skulls of any dynasty.

From the measurements given, the nose is appreciably longer than is usual in Egypt, and as the breadth is no greater than the Egyptian average, the resulting index is low. The only other case of such a low index comes from the Giza skulls of the ivth to vith dynasties mentioned above.

The few skulls brought to this country from Shurafa seem to indicate that there must have been considerable variation in the people, but unless it be supposed that there was a strong alien element in the population, it is difficult to account for the results obtained.

87. The interest of the nine skulls with which the following notes deal lies principally in the anatomical and pathological peculiarities which most of them present. Racially they appear to be mixed.

A. The skull of a young negro; the basilar synchondrosis is closed, but the third molars are not fully erupted. The skull is typical, being rather long, narrow and irregularly ellipsoid. Points of interest are the great size of the teeth; the hamular process of the lachrymal bone reaches the orbital margin on each side; fronto-squamous articulation on each side, and perforation of both tympanic plates. There is a large primary carious cavity in the second left molar tooth.

B. A young adult female; the basilar synchondrosis is closed and all teeth cut, but scarcely worn. There is a good deal of tartar on the mandibular incisors and canines. The face has a definitely negroid look and visible prognathism is very marked. The posterior part of the skull in the region of the parietal bones is markedly depressed and this is specially noticeable to the right of the middle line, where a large irregularly circular hole is situated. This hole, which reaches and involves the sagittal suture, measures 26 mm. in its transverse diameter and the same antero-posteriorly. Its margins are perfectly smooth and rounded, and show no reaction whatever to inflammatory changes. From these circumstances and from its position, which is at the site of the parietal foramen, it is believed to be an enormously enlarged foramen similar to those described by Professor Symmers in the *Journal of Anatomy and Physiology*, vol. xxix, p. 329. In his case, however, he describes the dura mater as adherent through the foramen to the pericranium, thus closing the openings. In this case the depression of the bones around and particularly below the opening incline the writer to the belief that there must have been a hernia of the membranes at this spot, forming a meningocele, the constant pressure of which from early life has distorted the bones against which it lay. That the girl was mentally defective is suggested by the condition of the teeth, which have never been used in mastication. A large apisthial notch in the foramen magnum is not without significance. The left superior and middle turbinate bones are much swollen and have pushed the vomer to the right.

Sir Victor Horsley, to whom the writer submitted this skull, believes it to be a case of trephining, but it in no way resembles those cases of prehistoric trephining described and figured by M. Manouvrier.

C. An adult female. The skull is long, narrow, and coffin-shaped, with protruding forehead of infantile

type. Both tympanic plates are perforated. There is marked notching of the basi-occipital. The face has more of the Nubian characters than of the Egyptian.

D. An adult man with a short rather wide pentagonoid skull. The metopic suture persists, which adds to the frontal width. The nose is prominent and the face characteristically Egyptian. The springing of the left masto-occipital suture and partial fracture of the basi-occipital at its junction with basi-sphenoid may indicate that this man was hanged. (See *Arch. Survey of Nubia*, 1907–1908, vol. ii. Report on the Human Remains, pages 100 and 334.)

E. An adult man with a very irregularly shaped skull, which has been distorted in childhood. The sutures are all closed, the sagittal and lambdoids being nearly obliterated. From the shape of the occipital condyles it would seem that the weight of the skull was borne chiefly by the left one. It is possible that torticollis might produce this. The teeth are very much worn.

F. An adult man, typically Egyptian. The skull is of pentagonoid form; the face is quadrangular, with marked eversion of the angles of the mandible. There has been a severe abscess probably due to exposure of the pulp cavity of the left upper central incisor. All the incisors are very much worn and the roots of both of those on the left side open into the abscess cavity. The latter opened on to the face, the palate, and in the floor of the nose on both sides of the septum. The left second molar has also been carious, and the crown has gone. In the mandible there are primary carious spots on each side between the second bicuspid and first molar. There is an almost perfect interparietal bone, the transverse suture passing on the right side into the lambdoid instead of ending in the asterion.

G. Young adult man with very broad brachycephalic skull. The frontal width is increased by persistence of the metopic suture. The face is broad and heavily built, and is quite unlike the typical Egyptian. The cephalic index is 81·3.

H. An adult man with a typical scaphocephalic skull. The highest part of the cranial vault lies in front of the bregma, from whence it slopes downwards to the lambda. The sagittal suture is totally obliterated, although this man is comparatively young and all the other sutures are open. The cephalic index is 64·8, in marked contrast with the last described. The race is almost certainly Egyptian.

88. The skull and bones now to be described are of extreme interest. A detailed account containing the anatomical and pathological description, with complete measurements, has been published in the *Journal of Anatomy and Physiology*, vol. xlvii, July 1913. The skull and skeleton are in the Museum of the Royal College of Surgeons, Lincoln's Inn.

The remains are those of a man, probably an Egyptian, of about thirty years of age. So far as it is possible to estimate his stature, he appears to have been little more than 5 feet in height. The most striking feature, however, is the enormous skull. It measures 235·5 mm. in its greatest length, and 184 mm. in the maximum breadth. A reference to the accompanying photographs (pl. lvi) will give a better idea of its size and appearance than is possible in a verbal description. Here it is placed beside the well-developed skull of an Englishman, and the contrast in length and height, as well as in the shape of the skull and the size and position of the face, are easily seen.

It will be noticed that the forehead in the Egyptian bulges considerably, and appears to overhang the face, which in its turn has almost the appearance of sloping slightly backwards in contrast with the forward slant of the face in the Englishman. Looked at from the front, it is seen that the skull of the Egyptian is asymmetrical, the right side being higher than the left, and also bulging to some extent. The face is also out of line, and the nose inclines to the left side. The capacity of this great skull has been estimated for the writer by the kindness of Miss Ryley in Professor Karl Pearson's Biometric Laboratory. It amounts to no less than 2,901 c.c., that is to say, very nearly double that of an average British skull. The great weight of the skull and brain has produced a flattening of the occipital condyles, through which it rested upon the spinal column, and the muscular effort required to steady it in this position has caused an excessive development of the normal ridge on the occipital bone, in the neighbourhood of which the great muscles of the neck are attached.

The skull has been submitted to several authorities, who all agree in considering that this man suffered from hydrocephalus. It is not unusual in such cases to find some amount of paralysis accompanying the head condition, and this man was afflicted with a partial paralysis of the left side of his body and limbs. This was probably the result of pressure on the right side of the brain, and the asymmetry already

referred to affecting the right side of the skull bears this out.

A detailed examination of the limbs and pelvic bones reveals features of great anatomical interest, which, as already mentioned, have been described at length elsewhere. Here it may be stated that while the left upper limb has not suffered in growth in length—it being actually longer than the right—it is lacking in development in all other directions owing to the absence of muscular power. The right upper limb, on the other hand, is remarkable for the size of its ridges for the attachment of muscles which are unusually strongly developed.

In the lower limb the same general features are observed, but here they are modified owing to the fact that the body weight had to be supported during walking and standing. While the right limb is nearly normal, the left is twisted in such a way as to show that this man walked with his left knee turned inwards and partly bent.

The bones of the pelvis show very distinctly that the loss of support on the left side, owing to the paralysis, has allowed the whole pelvis to tilt towards the left. The socket for the hip-joint is shallow and ill-formed, and the left hip-bone itself shows atrophy of that part to which the strong muscles, which assist in maintaining the body erect, are attached. This tilting of the pelvis downwards and to the left has brought about a lateral curvature of the spine.

It is suggested that when this man walked he did so with the aid of a staff carried across the body so as to reach the ground on the left side, and grasped in the right hand with perhaps some assistance from the left. With a sufficiently long staff held high up, it would be possible to lift the body sufficiently to advance the right limb, the left being dragged somewhat. Colour is given to such a theory by the enormous development of two arm muscles—the pectoralis major, which draws the arm towards the chest, and the deltoid, which elevates it to the level of the shoulder.

Sufficient has been said to shew the great interest attaching to this skeleton.

CHAPTER XVIII

REPORTS ON EARLY LINEN

By W. W. MIDGLEY

[MR. MIDGLEY of Bolton, who has for years studied microscopically many examples of spinning and weaving, has given reports on various groups of textiles from the British School excavations. As the interest of these details is much increased by comparisons of work of different periods, the reports have all been placed together here. The first report is on the fine group of linens in the great mastabas 2038, 2050, of the ist dynasty, samples of which were made up in mounted sets and distributed in cases to many museums. The second report is on linen of the same age from mastaba 1060. The third report is on Old Kingdom linen.—W. M. F. P.]

89. In the early portion of March, 1913, Prof. Flinders Petrie posted to me a collection of twenty examples of cloth, which he had unearthed during his excavations at Tarkhan, desiring that a careful examination of them should be made. The date given is that of the middle of the ist dynasty; and yet, notwithstanding their great age, upon examination it was found the fabrics were all sufficiently sound to bear dissection in order to find out details of their construction, and even to tease out the fibres from the yarns so that their diameters could be measured, as well as the kind of fibres used in the manufacture determined.

All the fabrics sent were made of linen. Their fibres, as will be seen upon a perusal of the annexed tables, are in the majority of cases of finer flax than the finest quality of the present day, clearly shewing that at this early period the method of "retting" and afterwards heckling or carding of flax was well understood. In fact I may say that in these cloths the fibres of the bast of flax are more thoroughly separated than in modern work. To demonstrate this fact are two photomicrographs of fibres from the cloths 2050 (2) and 2050 (17), each magnified 200 diameters; and for the purpose of comparison one of the fibres of the finest Irish linen obtainable. See pl. lvii, 1, 2, and 3. Now as we find the flax grown in France is more even in diameter than that grown in Ireland, and that Italian is still more so, it may be the yet warmer climate of Egypt will account for the fibres of these cloths being more equal than is the case with linen made in the United Kingdom.

In all the fabrics the type of weaving was of the simplest—"one-up-and-one-down," the darning method, or what we term "calico-weave" in Lancashire.

In the examination of Egyptian fabrics it had been noticed how very few of them shew the method of forming the selvages, only one (Tarkhan, iiird dynasty, sent October 3rd, 1912) having a true

selvage. Amongst the small pieces sent on March 4th, 1913, there are three with the selvage to them—2050/1, 2, and 6. These are described later on, but it would be interesting to have larger pieces of each of the other cloths to see how their edges are finished off. Our knowledge on the subject at present is too empirical to draw conclusions; but if a greater number of examples could be examined, probably a safe inference might be drawn as to the evolution of the modern selvage—that is, where the weft is passed continuously from side to side across the warp strands.

It is very remarkable that so many of these fabrics have both warp and weft yarns *doubled*, because it was generally supposed that the principle of doubling to obtain more than twice the strength originated in Nottingham during the first half of last century. It will be seen that in seventeen out of the twenty fabrics, the *warps were all doubled*, while there are twelve in which the weft is also doubled. Another peculiarity is that some of the warps are in *parallel pairs*—that is, there are two warps side by side in one "shed" of weft, as shown in photographs 9, 11, and 12.

In each case a bit of cloth about $1\frac{1}{4}$ inch × $\frac{5}{8}$ inch was mounted, without pressure, beneath thin cover-glass for microscopic examination. Then from each cloth strands of the warp and weft yarns were separated, and some of the fibres teased out with needles; these were also mounted under thin glass, the warp and weft ones being kept separate, though on the same slide. To obtain the average diameter, ten fibres of each were measured: these measurements, as well as the extreme range of them, are given in the appended tables. No fibre was measured unless it showed the characteristic "bamboo-structure" peculiar to flax.

Notes on the linen from Mastaba 2038 (three specimens):

(1) A fine cloth, with about half the warp yarns doubled, while all the weft is doubled. See photograph 4.

(2) A remarkably open, rough-looking cloth in which all the yarns are doubled, and in some of the warp strands are two yarns running parallel in one "shed" of the weft. Although apparently a coarse cloth the flax fibres are individually very fine and fully separated.

(3) A closely woven cloth of fine fibre. Both the warp and weft yarns are doubled. There was so much granular deposit upon this and some of the other cloths, probably due to the crystallization of mineral salts, that to assist in their examination it was found desirable to take it away by soaking in water, and drying.

Notes on linen from Mastaba 2050 (seventeen specimens):

(4) About $\frac{1}{2}$ inch of the margin is much closer in composition than the inner part, there being here 48 "ends" per inch, whereas the rest of the cloth has only 36. At first it was thought the weft yarns were only secured at the side by turning round the outer warp thread; but, upon dissecting a little under water, it was found to have the weft turned and continued across the warps again, forming a true selvage. A peculiarity of the fabric is that the warp yarns (doubled) are more than four times the thickness of the weft. See photograph 5.

(5) This is structurally the most interesting cloth in the lot. The selvage (?) is peculiar, as shewn in photograph 6, where it will be seen the weft does not return again across the warp, but is turned once or twice round the outer warp and then the ends left free. This is so remarkable that, to bring out this peculiarity clearer, all the warp strands except the outside ones were removed, then mounted in Canada balsam and photograph 7 taken. All the warp yarns are doubled, and are fully twice the diameter of the weft. For about $\frac{1}{2}$ inch at the side the cloth has 84 "ends," whereas the inner part has only 40 "ends" per inch. A photograph of this more open portion of the fabric is given in photograph 8.

(6) Both warp and weft yarns are doubled. There are about four instances per inch where the warps run in parallel pairs, as shewn in photograph 9.

(7) The cloth coated with crystalline deposit. Both warp and weft yarns are doubled and are very even in diameter.

(8) In this cloth about 25 per cent. of the warp and 10 per cent. of the weft yarns are doubled, and all are very regular in diameter.

(9) A very fine fabric. All the warp yarns are doubled, while the weft is of single yarns, with about every fifth "shed" containing two weft yarns parallel. The selvage of this cloth approximates closely with modern ones. See photograph 10.

(10) A fine cloth, with most of the warps doubled; odd ones, however, are single but in parallel pairs. The weft all of single yarns.

(11) All the warps are doubled, as well as a large proportion of the weft. Instances occur where there are two warps running parallel in one "shed," as may be seen in photograph 9.

(12) A fine, but rather open, cloth. There are about 60 per cent. of the warps and 30 per cent. of the weft yarns doubled. The doubled weft is distributed somewhat irregularly, sometimes one, sometimes two, three, or as many as four in succession.

(13) A strong fabric, all the yarns, warp, and weft are doubled, as shewn in photograph 12.

(14) A coarse, closely woven cloth, which has been dyed brown: it is probably owing to the dye that the fibres are far more brittle than are the rest of the cloths.

(15) A coarse, strong cloth in which all the yarns are doubled.

(16) This is a coarse, compactly woven fabric. All the warp yarns are doubled; the weft is all of single yarn, and only about half the diameter of the warps.

(17) A coarse, strong cloth in which all the yarns are doubled.

(18) A coarse, strong, and even cloth made of all doubled yarns.

(19) A coarse and strong fabric made of doubled warps and weft. Here and there are two warps parallel in one "shed."

(20) This is a very soft and open weave, its softness being due to the fact that the yarns have less twist in the spinning than is the case in other cloths.

	Warp "ends" per inch.	Weft "picks" per inch.	Warp fibres in 1 inch. Mean.	Max.	Min.	Weft fibres in 1 inch. Mean.	Max.	Min.
2038								
1	96	44	1923	1429	3333	1852	1429	3333
2	10	11	1389	833	3333	1834	909	2857
3	72	24	1900	1331	4000	2173	1333	3333
2050								
4	36	12	1791	1111	3333	1631	1111	2857
5	40	12	1739	1000	2500	1515	1250	2500
6	68	20	1818	1250	3333	2155	1538	2857
7	40	16	1495	1053	2500	2128	1666	2500
8	48	84	1852	1250	2500	1786	1179	3333
9	200	48	1980	1250	3333	2105	1722	4000
10	144	44	2173	1538	5000	1925	1427	2857
11	104	40	1754	1052	3333	1980	1250	2857
12	120	44	1755	1111	2500	2198	1250	3333
13	68	36	2173	1250	6666	1923	1250	5000
14	28	52	2439	1666	3333	2105	1429	3333
15	24	44	2198	1429	3333	1960	1111	3333
16	80	28	1868	1429	2500	2222	1429	3333
17	48	20	2064	1333	3333	1980	1052	3333
18	60	40	2247	1666	3333	1863	1250	2500
19	56	28	1980	1179	3333	2105	1666	3333
20	44	16	1722	1333	2500	1770	1111	2500
	Present finest Irish linen . .		1818	1053	2857			

90. Report on cloth from the ist dynasty mastaba, no. 1060. Pl. lviii, fig. 1, shews rhamie fibres teased from pre-dynastic cloth, 262B, found at Gerzeh. Fig. 2 shews flax fibres teased from ist dynasty cloth, 1060. Both are magnified 180 diameters. It will be remembered that all the pre-dynastic cloth from the cemetery of Gerzeh was of rhamie and not flax fibre; whereas all the cloth of the ist dynasty proves to be of flax. Fig. 4 is a sample of the pre-dynastic cloth, 262B, scale two-thirds, to show the general appearance of the weaving. Fig. 5 is much blackened, due to slow oxidation. It is composed of 72 "ends" (warps) and 6 "picks" (weft threads) per inch. The fabric is different from anything I have seen, the nearest approximation being a delicate lace-like cloth from the wrappings of the "Two Brothers" (xiith dynasty) in the Manchester Museum. In that, however, there were 100 "ends" and 30 "picks" per inch, whereas in this there are only 6 "picks." The effect of having so few weft-threads is to give an appearance suggesting an early attempt at lace manufacturing. Fig. 6 is a fine bleached linen. The mode of manufacture is a plain weave, "one up and one down"; and, having so many as 148 "picks" per inch, is a clear indication of the fineness of the spinning in those days. The photograph is magnified 20 diameters. Both weft and warp yarns are single, the former being nearly 50 per cent. thicker than the warp. The fibres of flax from which they are spun (see fig. 3) have not retained the characteristics of flax so well as in unbleached material. It is probable that the bleaching was due to accidental exposure. The fibres are $\frac{1}{2000}$ inch diameter:

Fig.	"Ends" per inch.	"Picks" per inch.	Diameter of threads. Mean. Ends.	Picks.	Extremes. Ends.	Picks.
5	72	6	$\frac{1}{143}$	$\frac{1}{50}$	$\frac{1}{111}$ to $\frac{1}{200}$	$\frac{1}{37}$ to $\frac{1}{77}$
6	64	148	$\frac{1}{143}$	$\frac{1}{100}$	$\frac{1}{143}$ to $\frac{1}{111}$	$\frac{1}{111}$ to $\frac{1}{333}$

91. Report on the cloth from various graves of ivth and vth dynasties at Kafr Ammar. All the cloths are composed of flax, but, as the diameters of the fibres shew, the quality varies considerably, the fabric of no. 522 being of remarkably fine, well-separated fibres. They are all of plain weaving, and, with the exception of the parallel warps referred to, are on the simple principle of the "one-up-and-one-down" method. None of the cloths have been dyed, nor do they contain evidence of contact with the balsams associated with most mummy-cloths.

Sample o. In this about half of the weft strands

are of double yarn, and only a few of the warp-threads are doubled.

Sample 522 (pl. lviii, no. 7). This is made of the finest fibre met with in the series of samples, having a mean thickness of only $\frac{1}{2177}$ inch. About 25 per cent. of the weft yarns are doubled; of the warp 20 per cent. are doubled, while there are 10 per cent. of them in parallel pairs — *i.e.* two "ends" in a "shed." Previously the writer has seen parallel pairs in the warps of cloths as follows: (*a*) Wrappings from a mummy in the British Museum; (*b*) in wrappings sent about two years ago by Mr. Ling Roth of the Halifax Museum, who told me they were of the xxvith dynasty, and brought to this country by Lord Derby for the Liverpool Museum. The following remarks occur in my report to him on fifteen cloths sent;

"Sample X. The selvages of this linen fabric are peculiar and somewhat elaborate. The outer margin is composed of four sets of ten yarns parallel to each other, forming one 'shed' of the loom; then comes a space $\frac{9}{16}$ inch wide, where the warp yarns are dyed red; then three more sets of ten parallel yarns together as before, followed by the general body of the cloth. The entire width of the selvages is $2\frac{1}{4}$ inches. The object of the accumulated strands is no doubt to strengthen the sides.

"Sample XI. Fine linen cloth, with a selvage $1\frac{1}{8}$ inch wide: the three outer and the two inner strands of warp of the selvage are made up of many parallel yarns, as in no. X, with an interspace of $\frac{3}{8}$ inch." And again (*c*), early last year, I had two samples of linen cloths sent by the Midland and also by the Lancashire and Yorkshire Railway Cos., which they use for making the waggon sheets, asking me to ascertain if there was any difference in the fabrics. All four were made of flax, of the same "counts" of yarn, and the same quality of fibre; the only difference between them being that in each case one sample was a simple weave, and in the others *all the warps were in parallel pairs*. I have been told that both Companies' experience has been that the latter were the most durable. It struck me as an interesting thing that a *new improvement* of the present century was familiar to the Egyptians thousands of years ago.

Sample 535. About 25 per cent. of the weft are doubled yarns; while in the warp quite 75 per cent. of them are doubled. The diameter of the warp threads shews a very wide range.

Sample 550 (pl. lviii, fig. 8; × 20 diameters). A very open, coarse, strong cloth; about 70 per cent. of both warp and weft yarns are doubled.

Sample 552 (pl. lviii, fig. 9; × 20 diameters). There are about 30 per cent. of the weft of doubled yarns, and about 25 per cent. of the warp. A very peculiar thing in the weft is one instance of two "sheds" being together, as shewn in the photograph.

Sample 554. A closely woven fabric of very evenly spun yarn. About 60 per cent. of the weft is doubled, whereas there are but few of the warp yarns doubled.

The number of "picks" and "ends" per inch, the measurements of diameters of the weft and warp yarns, and the diameter of the fibres in each sample will be found in the appended list:

Micro-analysis of linen cloths dating from the ivth and vth dynasties from the cemetery of Kafr Ammar, Upper Egypt.

No. of sample.	No. of "ends" per inch.	No. of "picks" per inch.	Diameter of threads. Mean. Weft.	Mean. Warp.	Extremes. Weft.	Extremes. Warp.	Diameters of fibres in inch.
0	26	64	$\frac{1}{60}$	$\frac{1}{62}$	$\frac{1}{71}$ to $\frac{1}{100}$	$\frac{1}{56}$ to $\frac{1}{68}$	1838
522	28	60	$\frac{1}{100}$	$\frac{1}{93}$	$\frac{1}{77}$ to $\frac{1}{125}$	$\frac{1}{77}$ to $\frac{1}{93}$	2177
535	24	60	$\frac{1}{100}$	$\frac{1}{64}$	$\frac{1}{99}$ to $\frac{1}{111}$	$\frac{1}{45}$ to $\frac{1}{90}$	1890
550	20	32	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{77}$ to $\frac{1}{100}$	$\frac{1}{56}$ to $\frac{1}{68}$	1685
552	24	64	$\frac{1}{93}$	$\frac{1}{89}$	$\frac{1}{83}$ to $\frac{1}{111}$	$\frac{1}{71}$ to $\frac{1}{125}$	1862
554	21	52	$\frac{1}{60}$	$\frac{1}{62}$	$\frac{1}{50}$ to $\frac{1}{71}$	$\frac{1}{62}$ to $\frac{1}{66}$	1773

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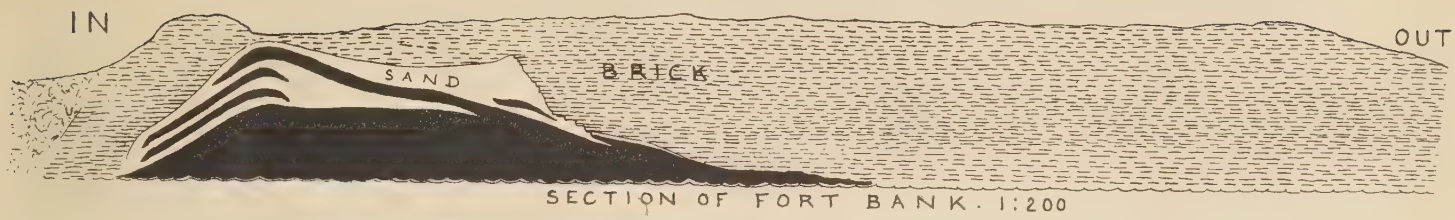

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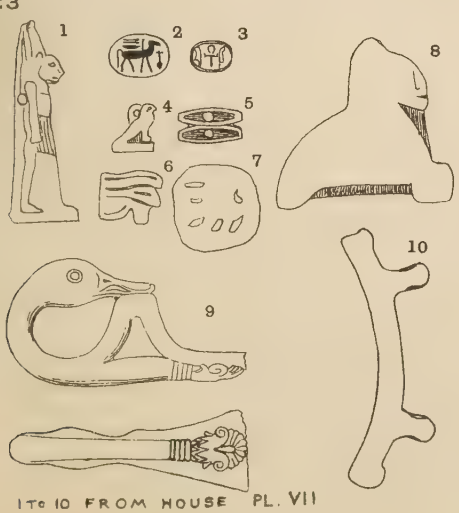

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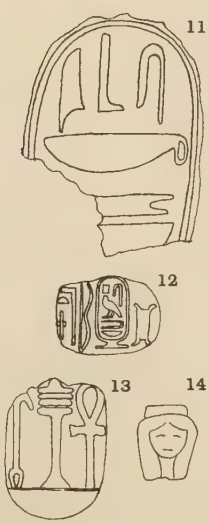

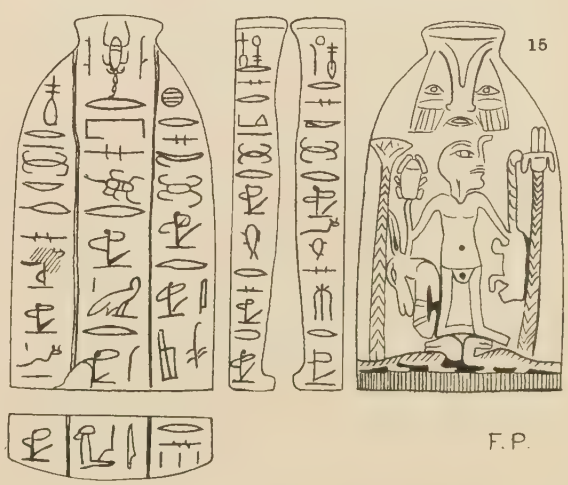

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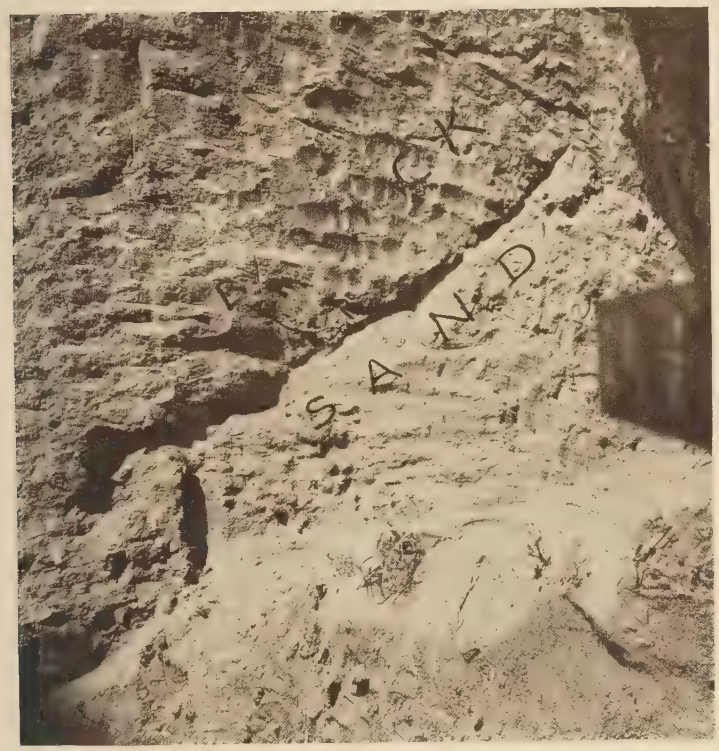
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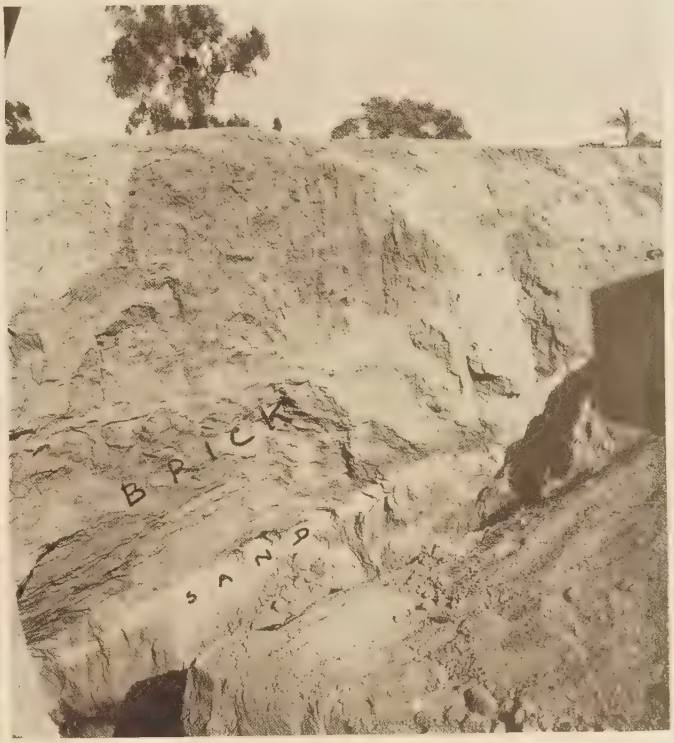
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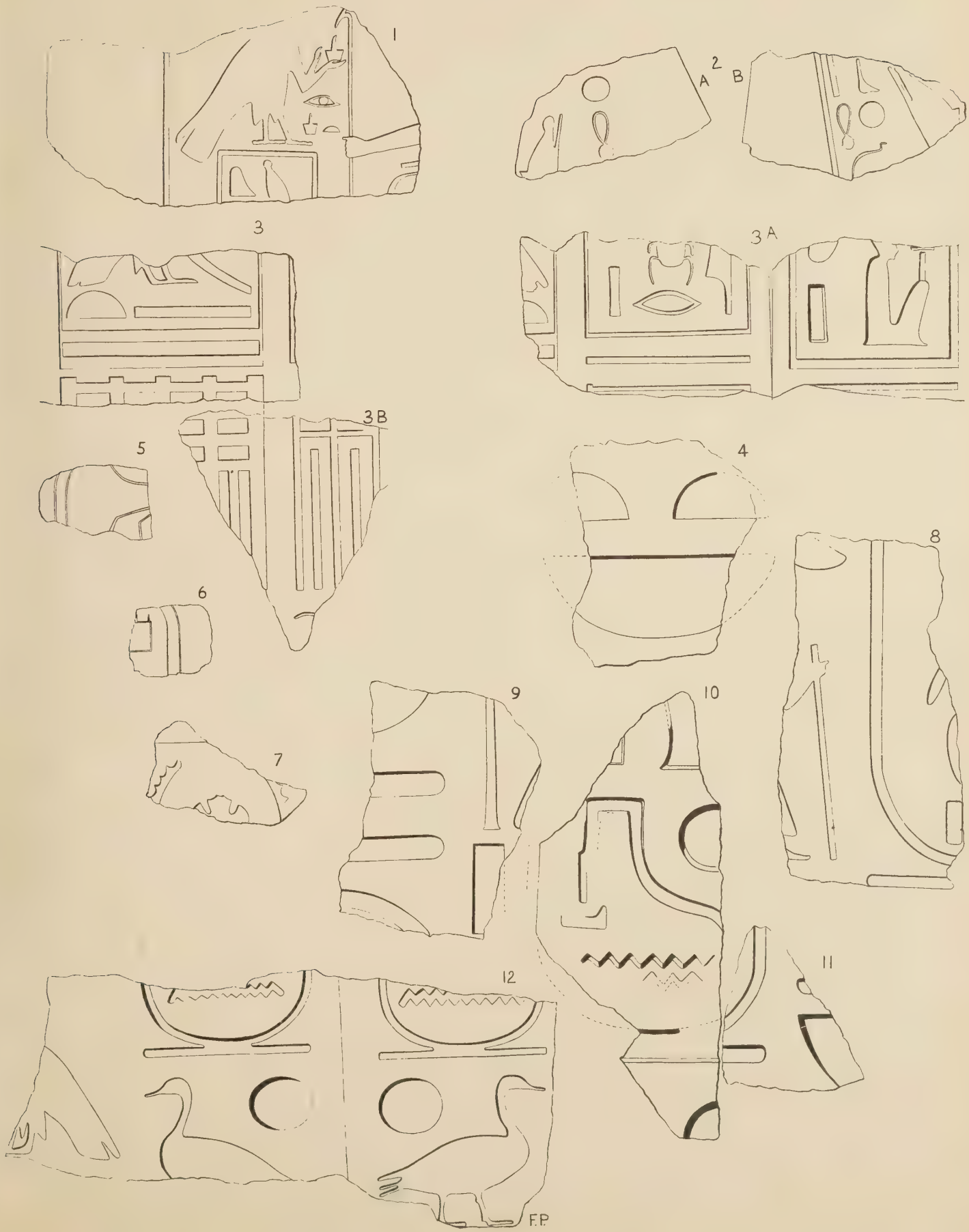
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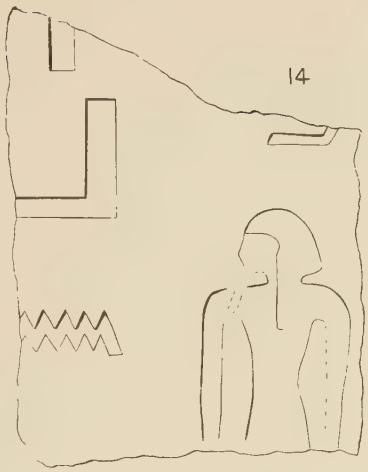
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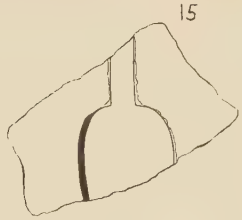
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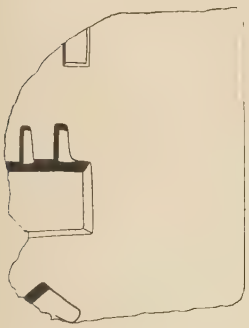
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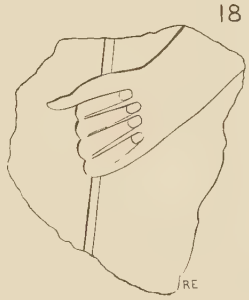
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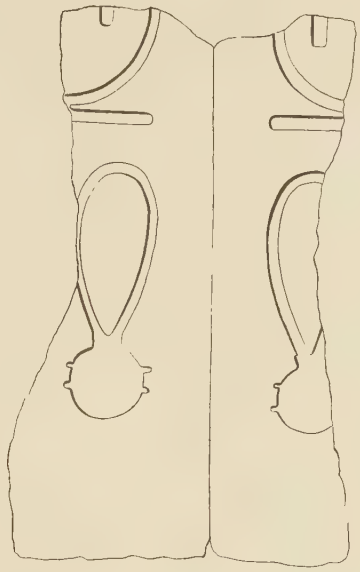
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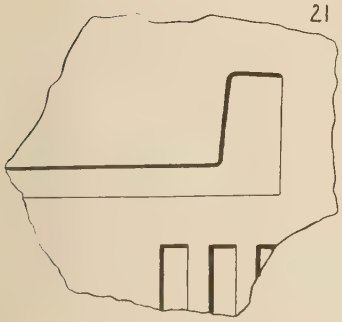
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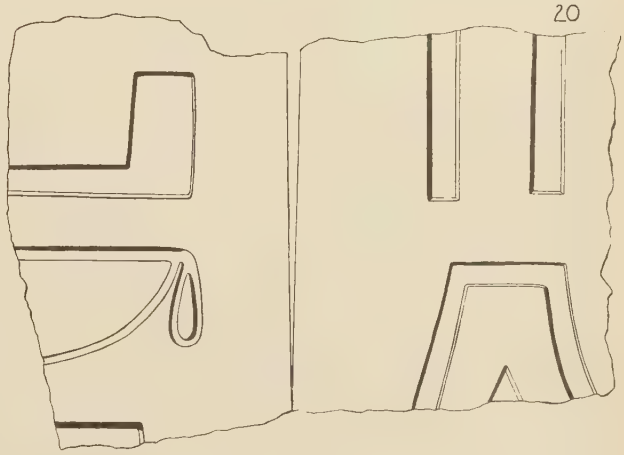
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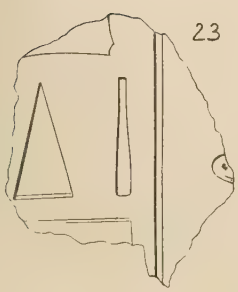
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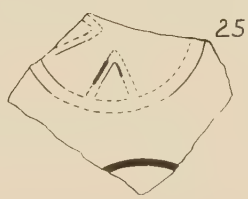
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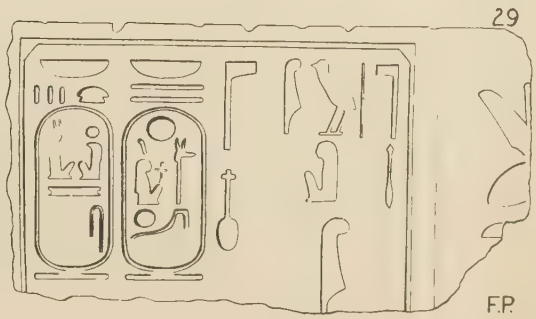
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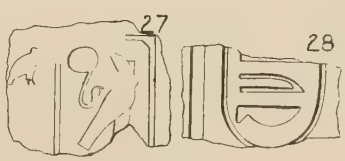
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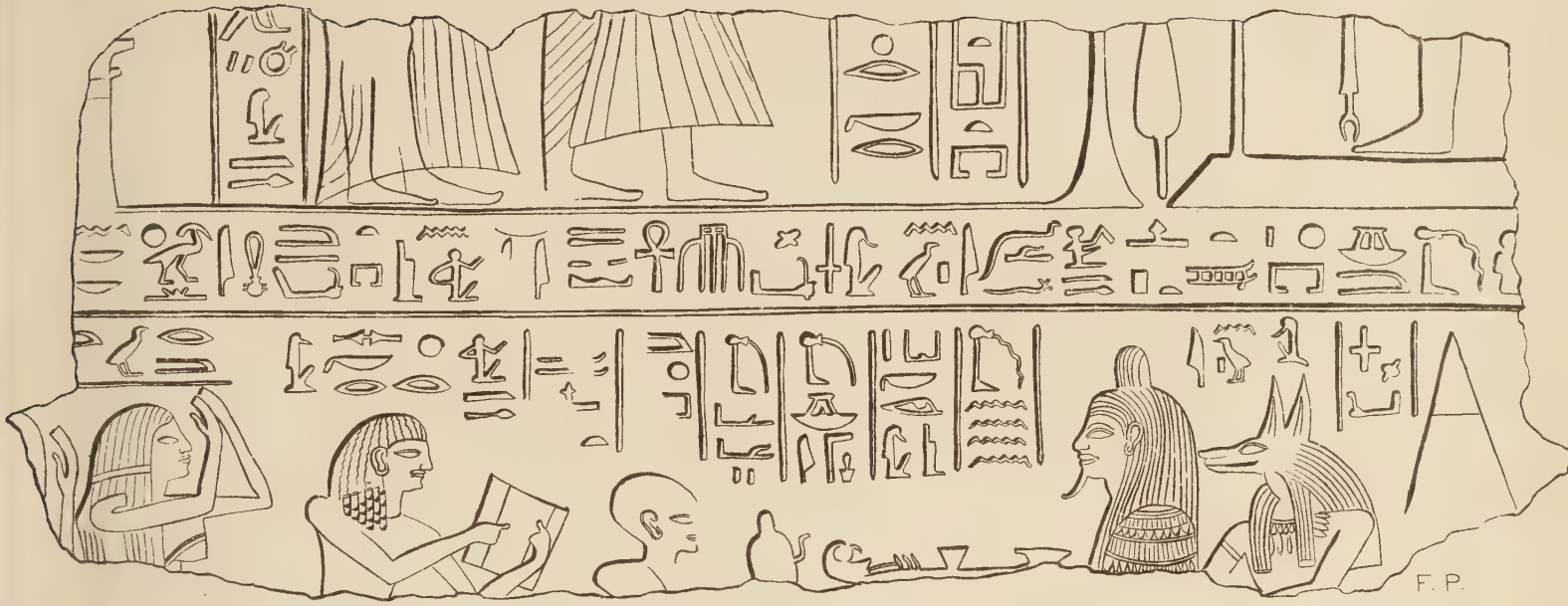

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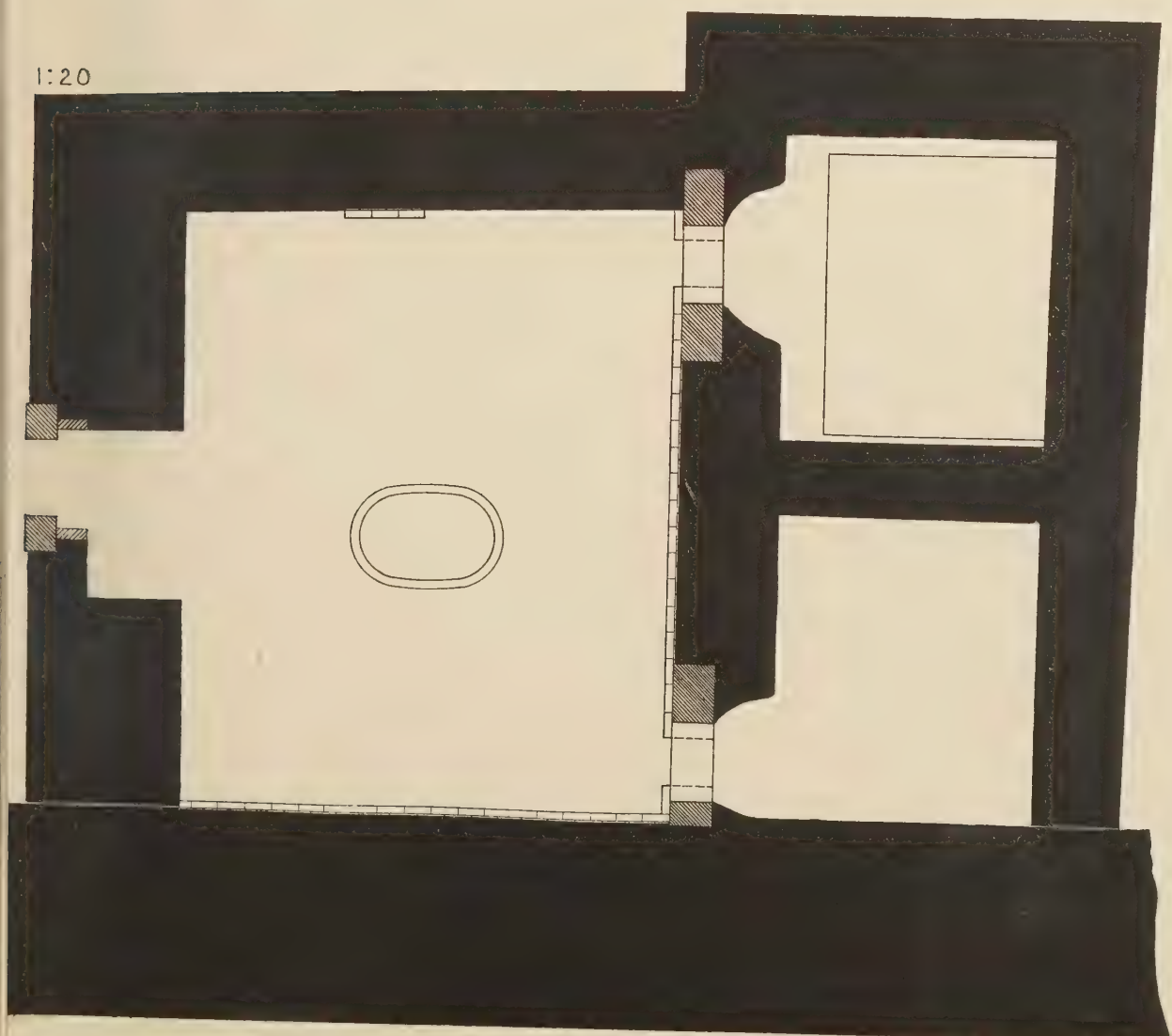

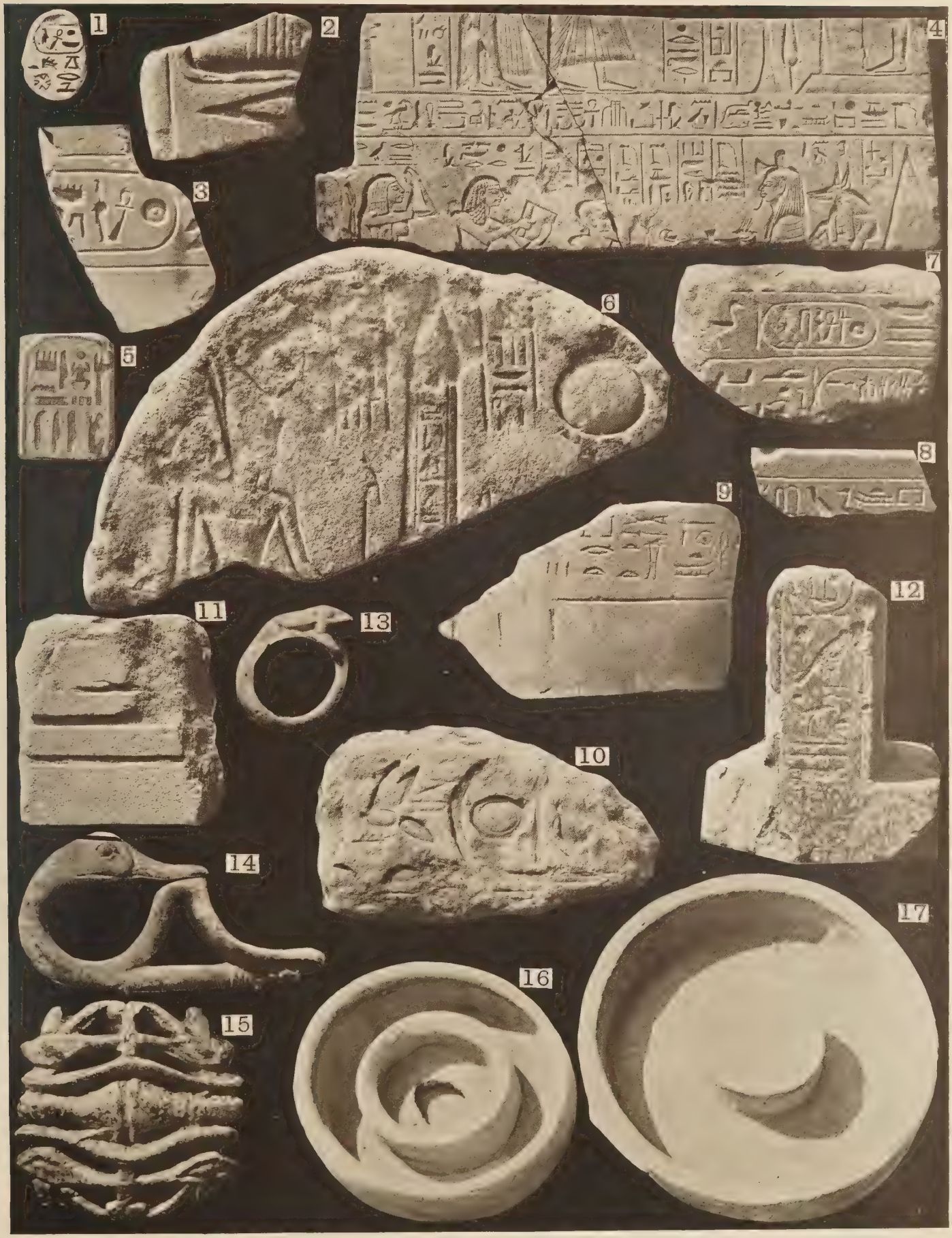
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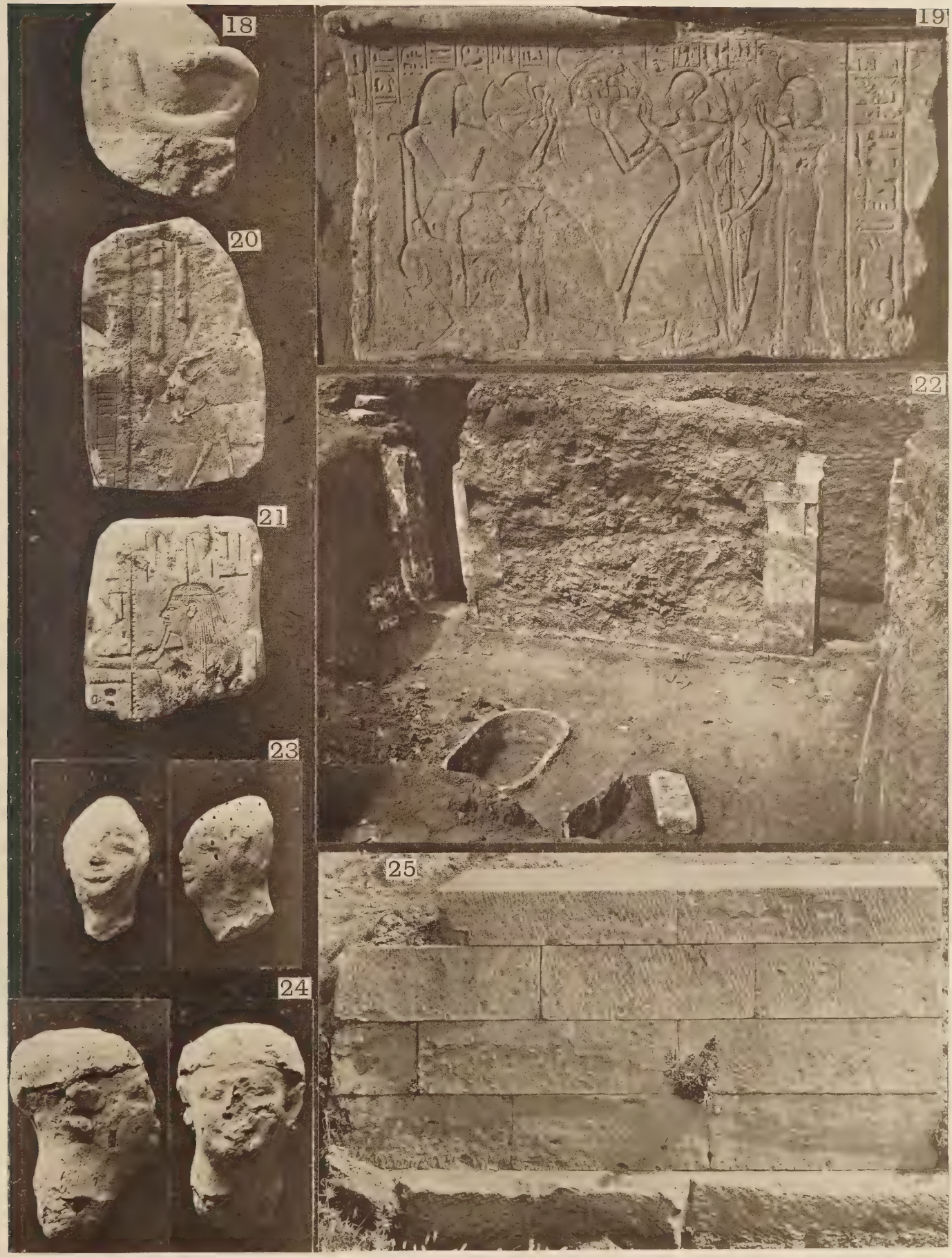
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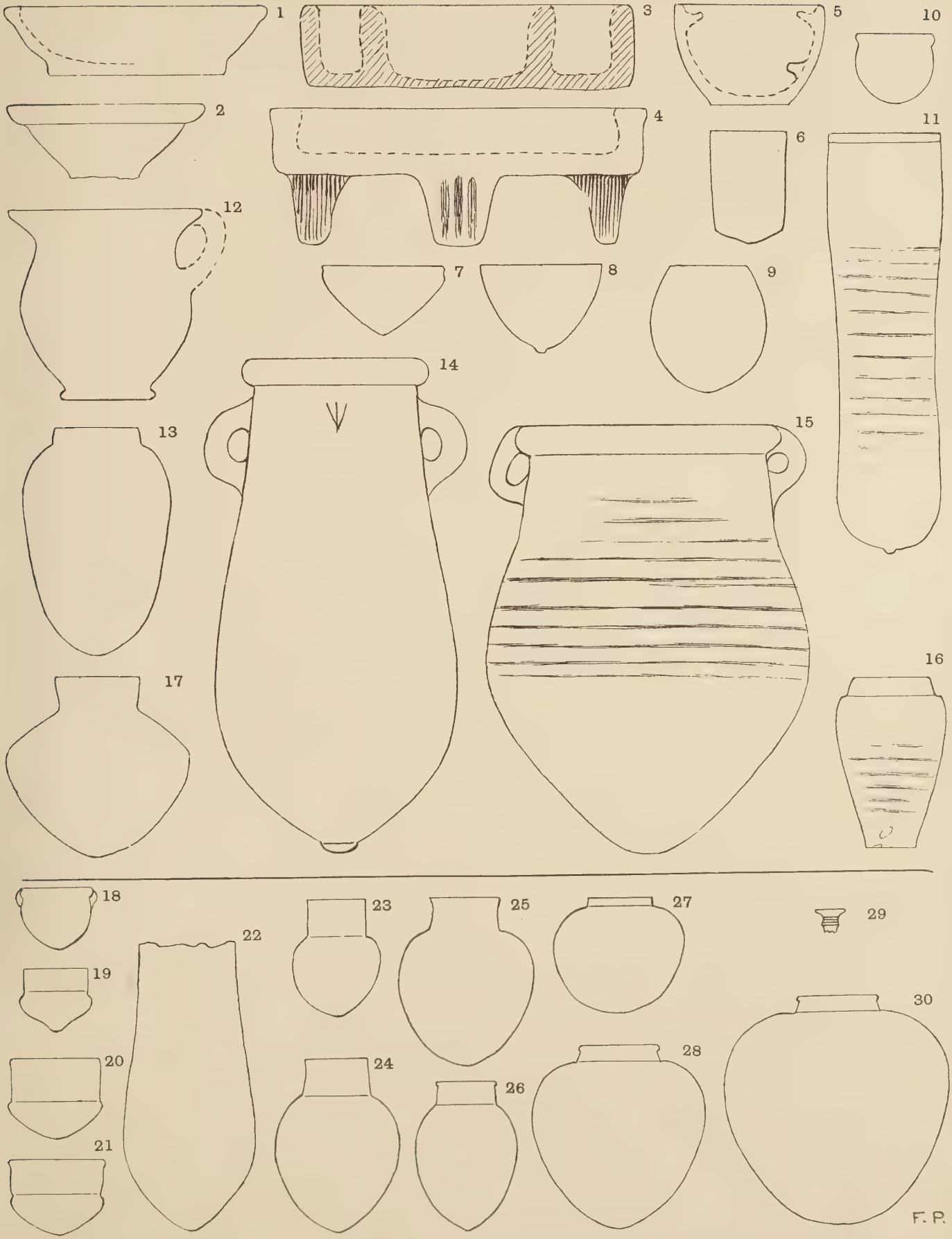
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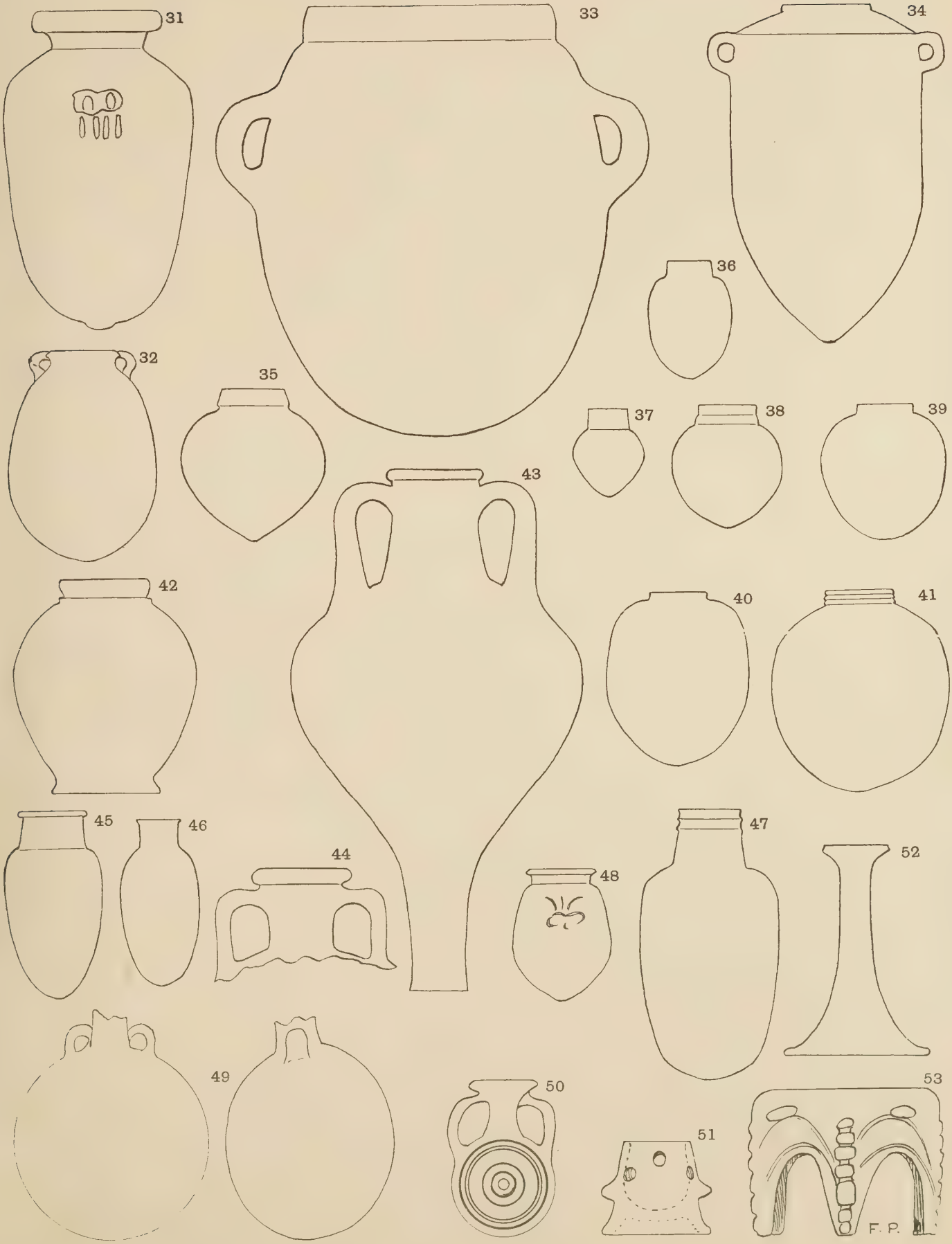
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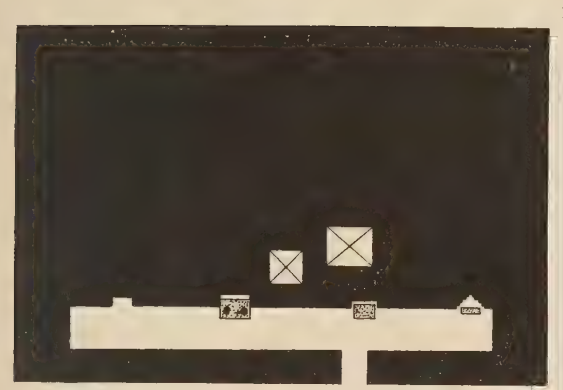
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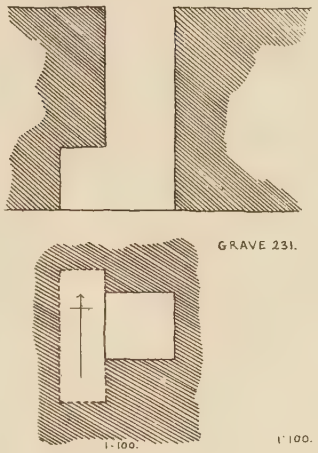
V DYNASTY MASTABA KAFR AMMAR
1:200.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GRAVE 231.
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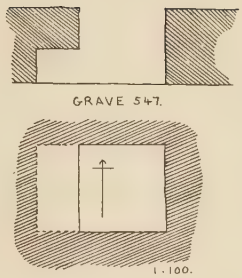
1:100.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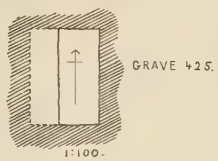
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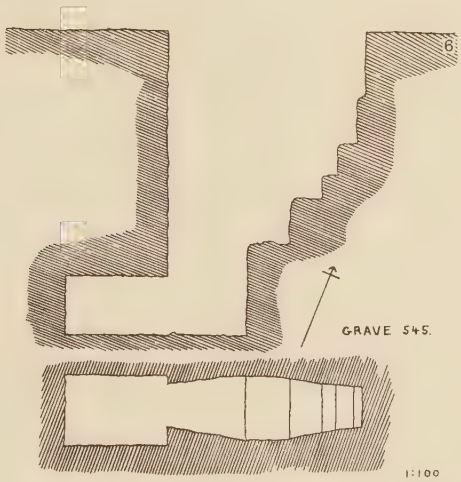
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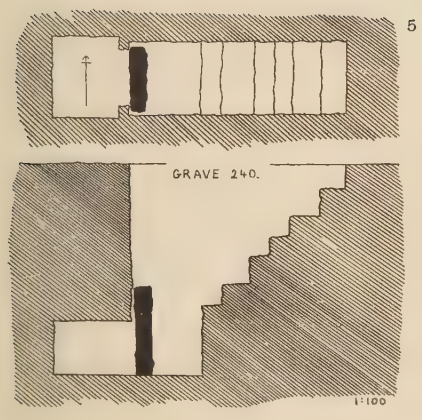
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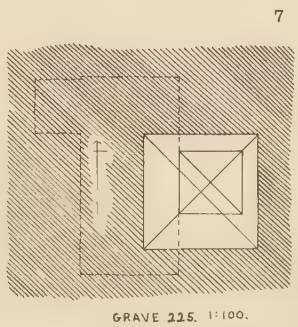
GRAVE 240.
1:100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GRAVE 225. 1:100.

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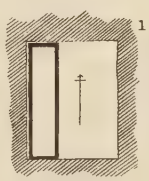
GRAVE 215. 1:100.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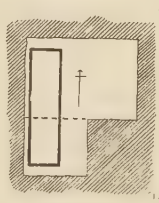
GRAVE 209. 1:100.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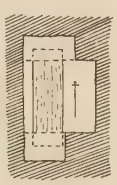
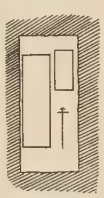
1:100.
GRAVE 208.


GRAVE 221 1:100.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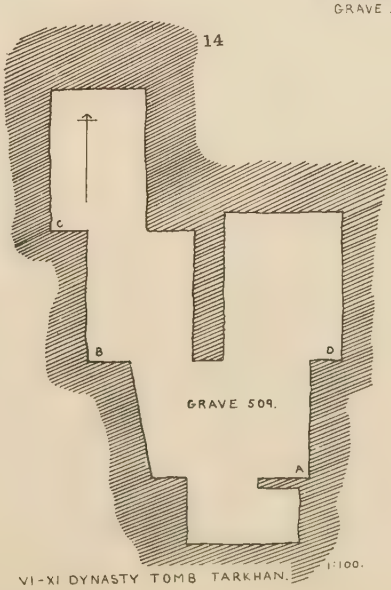
GRAVE 222. 1:100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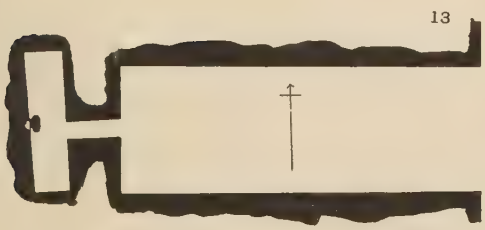
GRAVE 509.
VI-XI DYNASTY TOMB TARKHAN.
1:100.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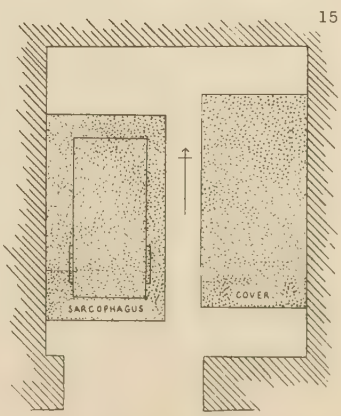
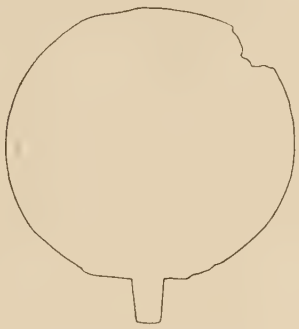
V DYNASTY CHAPEL TARKHAN 1:200.


15
SARCOPHAGUS
COVER
PTOLEMAIC TOMB ATFIH 1:100 E.M.

WOODEN SANDAL

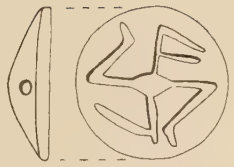
WOODEN SANDALS PAINTED RED
GRAVE 56 WITH MIRROR



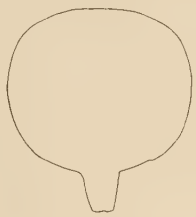
MIRROR, GRAVE 56

EYES ON COFFIN, GRAVE 56

WOUND FIBRE
BRACELET 341



111 BUTTON SEAL GRAVE 28



INSCRIPTIONS OF COFFIN 535, UZEBT-HEB.

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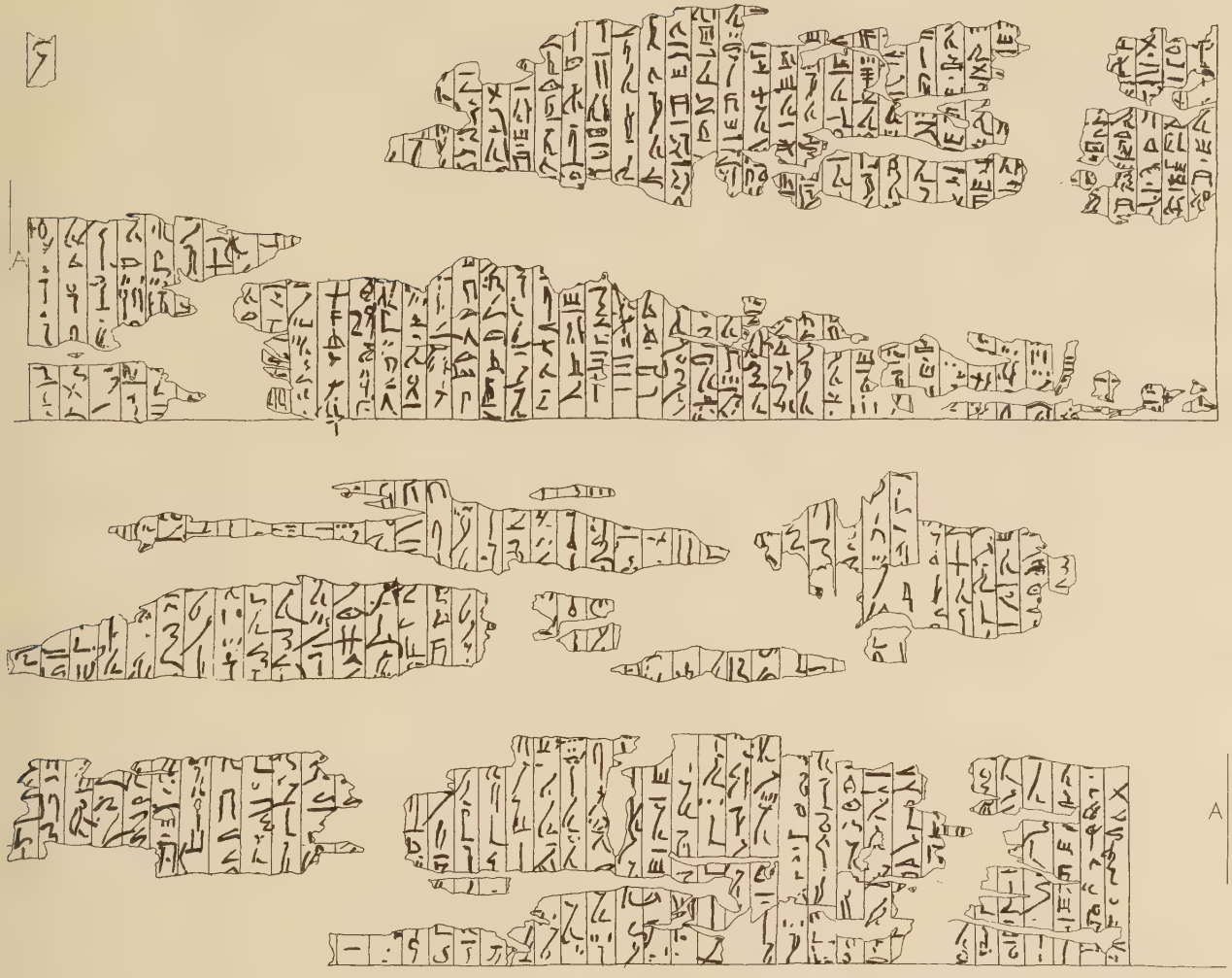
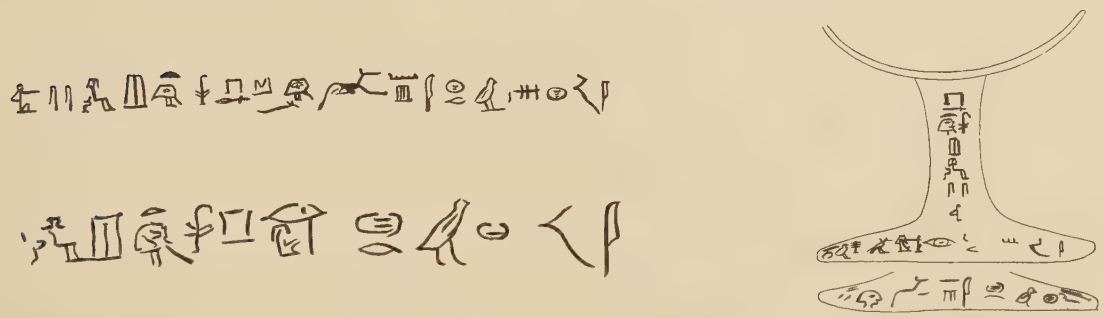
H.P.



COFFIN INSCRIPTIONS AND HEAD REST OF SHEPSES.

H.F.P.



H.F.P.

No.	SHAFT N. E. D.	CHAMBER N. E. H.	BODY Hd. F. Sx. Pos.	COFFIN L. B. D.	HEAD REST	LINEN	
14	40 40 132 S	S. 40 45 55	E S F V				COPPER MIRROR. MATTING
28	28 28 70 S		N E M? V	37 19 15 WD		+	BUTTON SEAL PL.xiv
33	25 77 53 R		N E F I			+	
34	70 40 R		N E ch V	25 13 WD			
45	41 42 140 S	W 25 84 26	N E M	70 20 20 WD		+	
47	38 39 90 S	W 20 50 20	N E M V				
51	90 40 150 R	N 40 29 28	E S V	34 18 WD		+	
56			disturbed	WD		+	MIRROR. SANDALS PL.xiv
67	108 60 73 R		N E F I	WD			
106	36 37 S	W 30 60 36	N E M				
207	72 48 18		N E M	37 15 11 REED	9		FIBRE ROPE
208	48 66 29 R		N E M	67 16 13 WD	8	+	PL.xii 12
209	70 54 60 R		N E M I	67 14 14 WD	22	+	WALKING STICK PL.xii 11
210	58 24 30 R	W 58 12 18	N E M				
214	72 34 66		N E M V	66 16 14 WD			
215	37 37 84 S		N E V	22 12 10 WD		+	ROPE PL.xii 10
216	49 51 48 S	W 48 18 30	N E F? V	31 15 14 WD		+	
217	37 33 78 R	W 79 23 36	N E M	66 17 16 WD			
218	39 34 74 R	W 66 36 40	dist. M	59 17 16 WD	17	+	
220	36 42 60 R		N F	60 15 14 WD		+	
221	36 38 59 S		N E ch. V	31 16 17 WD		+	PL.xii 8
222	81 34 84 R		N E (ch F E) V	54 16 15 WD 23 11 7½		+	PL.xii 9
225	68 68 180 S	W 96 39 68	3 disturbed				PL.xii 7 "SHEPSES"
226	41 41 96 S	W 87 44 32	N E M? V	78 18 14 WD	10		
227	39 39 72 S		dist. F I	WD			
231	40 41 120 S	E 78 26 37	N E F	74 20 20 WD		+	PL.xii 2
232	34 37 110 S	W 61 32 28	S E F L			+	ROPE
233	37 37 80 S	W 84 33 32	N E M V?	71 16 16 WD	20	+	WOODEN CHISEL
234	25		L	Box	23		2 POTS
235	44 24 52		N E M V	28 16 ½ TWIGS REED	14		
236	33 33 96 S	W 84 36 20	N E M V		as9		WALKING STICK
238	60 41 92 R	NE 52 28 27	NW NE F V	33 19 15 WD	as14	+	5 POTS, 3 ALABASTERS
240	85 43 125 R	W 48 39 32	N E M V	Box			3 ALABASTERS PL.xii 5
241	41 43 130 S	W 93 24 30	N E M V?	73 17 17 WD	as2	+	
243	44 38 62 R		N E M V	38 20 17 WD			
244	50 50 37 S	W 80 18 27	N E M	65 14 19 REED		+	
245	21 38 72 R		E S dist.	35 20 16 WD			
246	61 43 72 R	W 36 88 33	N up M V?	62 19 18 WD			WALKING STICK.
247	35 32 38 S		N E ch.	23 13 11 WD		+	BEADS. BRACELET
248	33 33 50 S	W 75 31 44	N E {F ch dist}	58 16 12 WD			
253	43 40 60 S	W 38 21 21	N E ch V?	25 15 10 WD		+	
254	20 62 56 R	W 24 12 14	N E ch V?	17 17 9 PAP^{S}		+	
255	38 40 60 S	W 59 24 22	N E F dist.	31 19 17 WD			
286	96 48 40 R		S up M I	70 13 17 WD			
299	51 28 60 R		N E M? V	42 15 15 WD			
341	90 42 22 R		NE SE V?	62 18 10 REED PAP.			ALABASTER XXVII,39
425	57 24 60 R	W 57 16 27	N E M V			+	PL.xii 4
426	37 38 108 S	W 71 38 32	N E F I	65 15 15 WD		+	WALKING STICK ?
429	43 43 S	W 103 42 42	dist.	60 18 18 WD			
431	40 41 140 S	W 94 30 36	N E F	72 15 15 WD		+	
432	39 30 64		NW NE F V				
462	42 42 60 S		N E M? V	57 17 REED		+	
465	32 32 S		NE SE F? V	46 19 16 WD			
467	60 28 55 R		N E M? V	49 16 13 WD		+	
468	34 36 S	N 32 49 27	W N F V	35 20 16 WD	15	+	

F.P.

No.	SHAFT N. E. D.	CHAMBER N. E. H.	BODY Hd. F. Sx. Pos	COFFIN L. B. D.	HEAD REST	LINEN	
469	25 14 26 R		N E ch. V				
470	34 18 52 R		N E M. V			+	
471	39 32 48 R	W 38 20 19	N E F V				
472	26 21 24 R		N E F V				
473	120 37 140 R	W 99 29 32	N E M I	81 23 22 WD		+	WALKING STICK
475	29 20 60 R	S 14 16 13	N E ch? V	12 12 6 TWIG			POTTERY. ROUND BASKET COFFIN
479	124 34 136 R	W 124 30 32	N E M I	WD	5	+	BK. POL. BOWL. WOODEN HOES. BASKET
480	84 43 132 R		N E M? V				MATTING. WALKING STICK.
482	85 32 96 R		N E F I	67 16 16 WD	19	+	PALETTE. GLAZED DISC. POT XXVII,13
485	32 34 132 S	W 72 36 38	N E M	71 20 19 WD		+	2 WOODEN CHISELS
486	47 48 168 S	W 72 36 36	N E F? V	WD	16		
505	30 32 S	N 24 68 28	W N M? V	60 15 9 REED	21	+	
506	48 30 36		N E M? dist.	41 20 PAPS	6		WALKING STICK. 2 SWITCHES
507	48 29 39		N E M? V	PAPRS	7	+	
509					25		PL xii 14
516	79 50 47 R		N E F? V	57 18 16 WD		+	CARNELIAN BEAD
517	50 40 100 R	W 72 39 29	N E F? V	58 19 11 REED		+	
518	39 39 S	64 24 21	N E {F ch. I			+	STRING
519	33 39 100 R	W 24 23	N E F dist.	71 13 15 WD			
521	38 24 26 R		S W F? V	37 19 9 REED		+	
522	40 40 180 S	W 92 32 32	N E M V	77 19 15 WD REED	18	+	WALKING STICK. POT DISH
526			V	BOX	26		
528	38 40 S	W 48 18 24	N E F V				
529	27 19 18 R		N E ch. V	21 11 5 TWIG		+	
530	34 36 84 S	W 68 27 31	N E F? V	63 16 15 WD		+	
531	39 34 60 R	W 66 24 36	N E F V	59 15 17 WD			
532	38 53 144 R		N E F V	37 21 23 WD	STONE	+	"POT.
535	36 36 84 S	W 68 19 31	N E F? V	61 15 15 WD	as 16	+	UDEBT-HEB PL xiv
536	36 40 108 S	W 98 21 28	N E F? V	68 19 15 WD	as 2	+	
537A		N	E S M		STONE	+	
B	52 59 180 R	N 12 24 12	W N ch.				
C		W 43 37 28	N E V			+	
539	46 37 64 R	W 50 21 22	N E F V	39 17 12 WD		+	OX HORNS
543	33 48 130 R	W 51 31 31	N E M V	37 19 17 WD			
545	38 115 136 R	W 41 60 35	N E M dist.	WD			POTTERY. STEPS. PL xii 6
546	48 22 35 R		N E M V		as 16	+	
547	51 57 S	W 50 25 20	N E M V			+	PL xii 3
548	96 29 60 R		N E M I	68 15 16 WD	3	+	
549	56 19 24 R		N E ch. V	18 18 9 RUSH		+	ROUND BASKET COFFIN
551	46 20 46 R	W 46 12 13	N E M V			+	CHARCOAL
553	66 36 24 R		N E M V	36 19 16 WD	2	+	
554	64 24 50 R	W 71 30 26	N E F V	57 17 WD	as 2	+	
555	50 51 192 S	W 73 60 50	dist.				ALTAR OF OFFERINGS
556	33 38 36 R		N E F V	32 19 WOOD TRAY	4		
557	40 41 91 S	W 72 24 24	N E F V	58 13 14 WD		+	BRACELETS
558	36 22 24 R		N E F V		BRICK	+	BL. BEADS. SHADUF HOOK
559	37 37 55 S	W 30 15 22	N E F V	27 17 WD		+	EYE
560	93 36 46 R		N E M V	55 15 16 WD		+	
570	36 37 36 S	W 37 22 24	N E ch. V	28 12 10 WD	STONE	+	
570*	48 34 43 R		N E F V	41 22 18 WD		+	
632	38 35 120 R	W 84 18 31	N E F? V	67 16 14 BOX	1	+	
650	ROUGH HOLE		N E V	38 21 22 WD			
651	" "		N E ch. V	32 18 19 WD			
652	92 34 57 R		N E M? V	69 20 20 WD	as 21	+	
654	32 34 36 S	W 23 23 14	N E ch. V	14 14 6 FIBRE			ROUND BASKET BURIAL. POTTERY.

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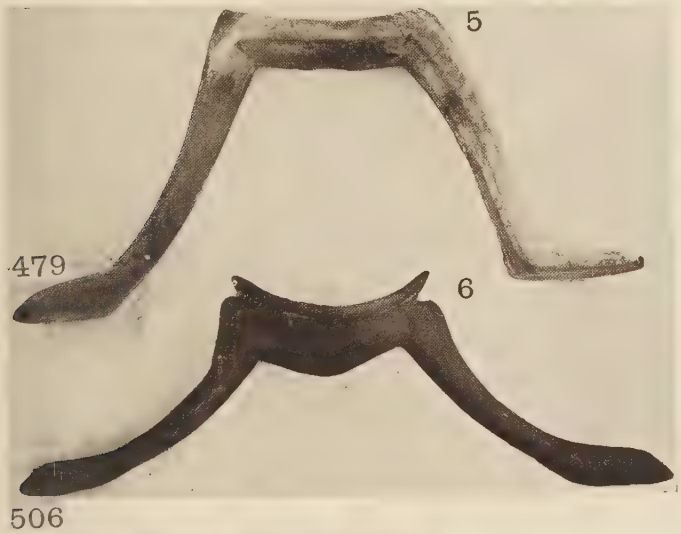
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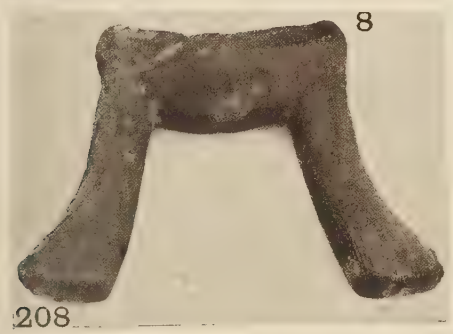
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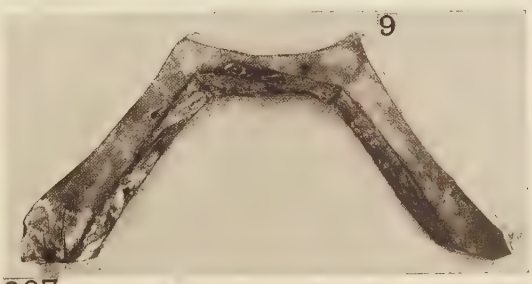
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No.	Fig.	HIGH MID.	HIGH END	TOP LONG	TOP BRD.	FOOT LONG	FOOT BRD.	FORM COLUMN	COLUMN BASE	COLUMN MID	COLUMN TOP	BASE HIGH	BASE BRD	
TYPE 1														
241		5·6	6·7			7·1	2·1							
536		6·0	6·5			5·1	2·0							
548	3	5·5	6·5			5·6	2·0							
553	2	5·$\frac{0}{2}$	5·9			7·0	2·7							Front lower than back: Side projections.
554		6·0	7·6			7·7	2·0							
556	4	7·0	8·5			5·0	2·7							Only half remaining, right side gone, shewn by dowel holes.
TYPE 2														
532	1	6·9	7·6	6·0	2·1	6·5	2·0							Pierced through, leaving 8 square pillars.
TYPE 3														
207	9	5·2	5·9	4·5	·8	12·7								Legs pentagonal.
208	8	6·1		5·0	2·1	9·7								
479	5	5·5		6·2	2·5	21·								Legs octagonal
506	6	4·4		4·7	2·1	15·5								
507	7	5·5		6·4	3·9	12·7								Four legs (Cairo Museum)
TYPE 4														
226	10	5·5	7·1	7·1	3·2	7·6	3·0	ROUND		1·4				Inscription of Shepses.
TYPE 5														
486	16	6·0		6·7	2·5	6·5	2·4	ROUND	1·5		1·1			
522	18	6·1	8·0	6·9	3·0	7·2	3·1	FLUTED	2·5	1·7	1·9			Fluted with 41 grooves ·06 deep
535		6·2	7·7	7·2	2·5	7·0	2·2			1·0				
TYPE 6														
235	11,14	6·2	8·1	6·9	2·2	7·0	2·2	RIBBED	1·4		·9	4·9	1·7	Ribbed with 11 ribs
238														
468	15	6·0	7·2	7·0	2·9	6·2	1·7	FLUTED				4·7	1·7	
TYPE 7 IXTH XITH DYN.														
209	22	6·2	7·6	7·4	2·5	7·2	2·0	OVAL	1·9		1·0			
218	17	6·4	7·4	6·1	2·1	7·4	2·0	RECTANGLE						
?	24	5·5	7·4		2·6	7·2	2·5							Top slightly tilted.
233	20	6·2	7·7	6·9	2·9	8·2	3·2							
482	19	5·$\frac{4}{8}$	7·7	7·2	2·2	7·5	2·5	OCTAGONAL		1·5				
509	25	5·9		5·4+	2·7	8·0	3·1							19 similar in other graves.
505	21	6·4	7·5	7·2	2·7	7·5	2·6	OVAL	2·0	1·4	·9			
652		6·2	7·5	6·5	2·6	6·4	2·9			1·4				
TYPE 8 XTH XITH DYN														
234	23	6·0		6·7	2·4	9·2	2·6	6 RODS		·4				
526	26	5·9		7·7	2·4	9·2	2·6	6 RODS		·4				2 rods missing.

F. P.

GRAVE	SEX	BOX	BASKET	SHAFT	CHAMBER	HOLE	POTTERY	REST
241	M	73×17		43×41	93×24×30			
536	F	68×19		40×36	98×21×28			
548	M	68×15		96×29			4 Jars	1
553	M	35×19		66×36				
554	F	56×17		64×24	71×30×26			
556	F	rotten		38×33				
632	F	66×16		38×35	84×18×31			2
207	F		37×15			72×48		
208	M	67×15½		48×30				
236	M			33×33	84×36×20			3
479	M	rotten		124×34	124×30×32			
506	M		41×20	48×30				
507	M			48×29				
226	M	77×17		41×41	87×44×32			4
486	F	rotten		48×47	72×36×36			
522	M	76×18		40×40	92×32×32		1 R Dish	5
535	F	61×15		36×36	68×19×31			
546	M			48×22				
235	M		28×16			44×24		
238	F	33×18½		60×41	52×28×27		4 R Jars	6
468	F	34×20		36×34	49×32×27			
209	M	67×13½		70×54				
218	M	59×16		39×34	66×36×40			
221	M		57×17	42×42				7
233	M	70½×16		37×37	84×33×32			
482	F	67×15½		85×32				
505	M		60×15	30×32	65×24×28			
652	M	69×20		92×34				
234	F	72×15½				84×18	2 Jars X-XI DYN.	8
526	M	67½×16		77×43	86×31×36		1 Jar	
532	F	41×24½		53×38				
537a	M			59×52	29×20×21			BRICKS
558	F			36×22				OR
570	C	26½×11		37×36	37×22×24			STONES

CHART OF GRAVES CONTAINING COFFINS WITH BOUND BOARDS

GRAVE	COFFIN	S	E	CORNER TYPE	HEADREST TYPE	SHAFT	CHAMBER	TIED CORNER	PINNED CORNER	TYPE OF BINDING
214	65·5×15·5	1·7	1·7	3		60×72		×		
516	56·9×17·9	1·9	2·1	3		79×50		×		
522	76·5×18·4	2·2	2·2	5	5	40×40	92×32×32	×		MORTISE
543	36·5×19	1·6	1·2	4		48×33	51×31×31		×	LACING
531	59×15	1·9	2·0	3		39×34	66×24×36	×		
536	68×19·2	1·9	1·9	6	1	40×36	98×21×28		×	
557	58·2×12·9	1·3	1·6	4		41×40	72×24×24	×	×	
220	60×15	?	?	6		42×36			×	SECRET
431	71·7×15·1	1·7	1·9	4		41×40	94×30×36	×		MORTISE
632	66·4×16	1·7	1·4	6	2	38×35	84×18×31		×	LACING
208	67×15·5	1·8	1·8	4	3	66×48		×		HOLES
468	34·3×20	·7	·5	2	6	36×34	32×49×27	×		AND
553	35·6×19	·9	·9	2	1	66×36		×		GROOVE

E.M.

CHART OF GRAVES CONTAINING BASKET-COFFINS

GRAVE	SEX	SHAFT	CHAMBER	HOLE	HEADREST	BASKET-COFFIN	
207	F			72×48×18	No. 3	37×15×11	REED.
244	M	50×50	80×18×27			65×14×9	"
462	M	42×42	73×27×18			57×17×?	"
505	M	30×32	65×24×28		No. 7	60×15×9	"
517	F	50×40	72×39×29			58×19×11	"
521	F	38×24				39×19×9	"
254	C	62×20	24×12×14			17×17×9	PAPYRUS
506	M			48×30×36	No. 3	41×20×?	"
507	M			48×29×39	" 3	Decayed	"
341	?	90×42				62×18×10	REED-AND -PAPYRUS
549	C	56×19				18×18×9	RUSH
475	I	29×20	16×14×13			12×12×6	TWIG
529	I	27×19				21×11×5	"
235	M	44×24			No 6	28×16×?	TWIGS + REEDS
654	I	34×32	23×23×14			14×14×6	FIBRE
480	M	84×43				REED MATTING	

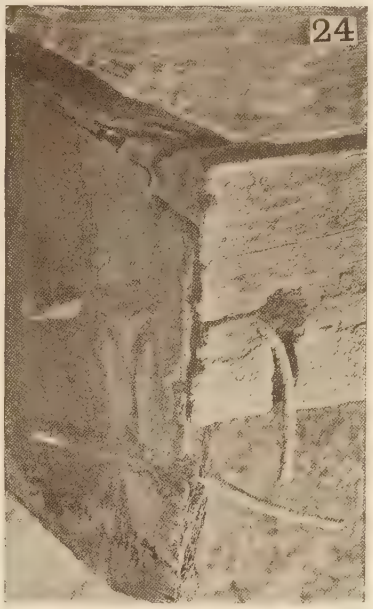
CHART OF CORNER-JOINTS OF WOODEN COFFINS

GRAVE	SEX	COFFIN	S	E	SHAFT	CHAMBER	PILLOW	JOINT
217	A.M	65·9×16·5×15·5	2·0	2·0	37×33×78	79×23×36		1
51	?	34×18	?	?	90×40×150	40×29×28		
215	?	22×11·4×10	·5	·5	37×37×84			
233	A M	70·5×16×15·5	1·5	2·1	37×37×80	84×33×32	TYPE. 1	
238	A F	33×18·5×15	1·1	1·3	60×41×92	52×28×27	" 6	
245?	?	35×20×16	?	?	38×21×72			2
255	A F	30·5×18·7×17	1·2	?	40×38×60	50×24×22		
468	A F	34·3×20×16	·7	·5	36×34×108	49×32×27	" 6	
532	A F	37×20·7×23·2	1·8	1·8	53×38×144		STONE	
539	A F	38·5×16·4×12·2	1·5	1·0	46×37×64	50×21×22		
353	A M	35·6×19×16	·9	·9	66×36×24		1	
650	C	37·5×20·5×22·2	1·7	1·5	ROUGH HOLE			
651	A ?	31·3×18·0×18·5	1·4	1·5	" "			E.M.

28	A M	37×19×15			38×38×70			
34	?	25×13			70×40			
45	A M	74×20×20			42×41×140	26×25×84		
209	A M	67×13·5×13·5	1·8	1·8	70×54×60		TYPE 7	
214	A M	65·5×15·5×13·5	1·7	1·7	72×60×66			
216	A M	14·9×30·8×13·8	·7	·7	51×49×48	48×18×30		
233	A M	70·5×16×15·5	1·5	2·1	37×37×80	84×33×32	" 7	3
241	A M	73×17×17	1·8	1·8	43×41×130	93×24×30	" 1	
516	A F	56·9×17·9×16	1·9	2·1	79×50×47			
530	A F	63×15·5×15	1·7	1·7	36×34×84	68×27×31		
531	A F	59×15×16·5	1·9	2·0	39×34×60	66×24×36		
535	A F	61×15×15	1·6	1·9	36×36×84	68×19×31	" 7	
559	A F	26·4×17·2×?	·6	·6	37×36×55	30×15×22		
208	A M	67×15·5×12·5	1·8	1·8	66×48×29		TYPE 3	
226	A M	77·3×17·3×13·5	2·1	2·3	41×41×96	87×44×32	" 4	
431	A F	71·7×15·1×15·1	1·7	1·9	41×40×140	94×30×36		4
543	A M	36·5×19×17	1·6	1·2	48×33×130	51×31×31		
557	A F	58·2×12·9×13·5	1·3	1·6	41×40×91	72×24×24		
299	A M	41·5×15×14·5	·7	·7	51×28×60			
429	—	60×18×18·1	1·3	1·0	43×43	103×42×42		5
522	A M	76·5×18·4×14·7	2·2	2·2	40×40×180	92×32×32	TYPE 5	
218	AM	59×16·8×16	1·6	1·6	39×34×74	66×36×40	TYPE 7	
220	A F	60×15×13·5	?	?	42×36×60			
221	C	30·4×16·3×16·8	·5	·9	38×36×59			
222	A F	54×16×15·5	·8	1·1	81×34×84			
227	A F	rotten	·4	·9	39×39×72			
231	A F	73·5×20×20	·9	·7	40×41×120	78×26×37		
243	A M	37·7×19·7×17	·9	1·0	44×38×62			
246	A M	61·5×18·5×17·7	1·0	1·0	61×43×72	36×88×33		
247	C	22·8×13×10·7	·7	·5	35×32×38			
248	A F	58×15·5×12	1·1	1·3	33×33×50	75×31×44		
253	C	25·1×14·7×9·3	·7	·6	43×40×60	38×21×21		
426	A F	64·5×14·5×15	1·0	1·0	38·×37×108	71×38×32		6
465	A F	45·5×18·7×15·5	1·0	·7	32×32×49			
473	A M	80·5×22·7×22	2·0	1·9	120×37×140	99×29×32		
482	A F	67·2×15·5×15·5	1·1	·6	85×32×96		TYPE 7	
519	A F	70·4×12·6×15	2·0	2·0	39×33×100	?×24×23		
632	A F	66·4×16×14	1·7	1·4	38×35×120	84×18×31	" 2	
536	A F	68×19·2×15	1·9	1·9	40×36×108	98×21×28	" 1	
652	A M	69·2×20·2×20	2·0	2·0	92×34×57		" 7	
554	A F	56·5×17×?	1·6	1·5	64×24×50	71×30×26	" 1	
560	A M	54·7×15×15·5	·6	·6	93×36×46			
570	C	28·7×11·4×9·9	1·1	1·0	37×36×36	37×22×24	" BRICK	
286	A M	70×13×16·5	1·2	1·4	96×48·40			
467	A M	48·5×15·6×13	·7	·8	60×28×55			
485	A M	71·2×20×19	1·9	2·0	34×32×132	72×36×38		7
548	A M	68·2×15·2×15·5	1·3	1·5	96×29×60		TYPE 1	
570*	A F	40·5×22×18·1	·9	·7	48×34×43			

E.M.

2


24

9
553

10
632

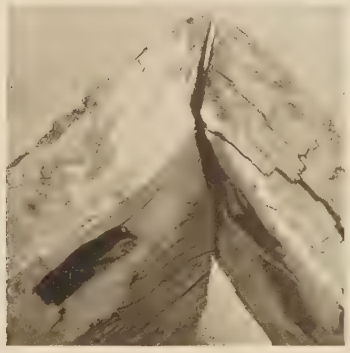
20
431

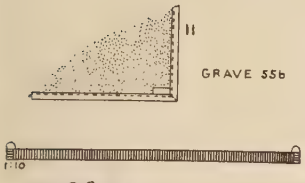
19

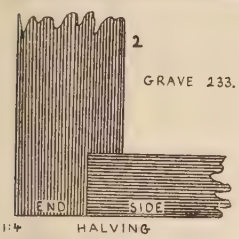
21

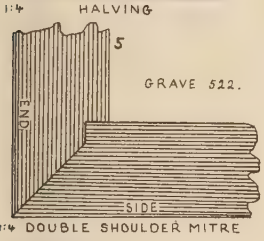
6

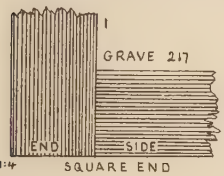
23

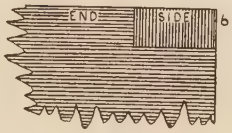


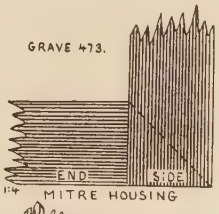

11
GRAVE 556
1:10

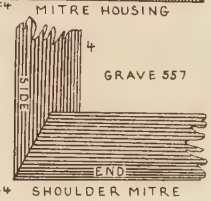

2
GRAVE 233.
END
SIDE
1:4 HALVING

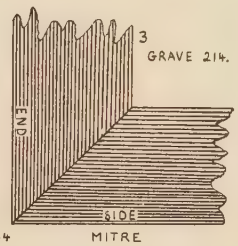

5
GRAVE 522.
END
SIDE
1:4 DOUBLE SHOULDER MITRE

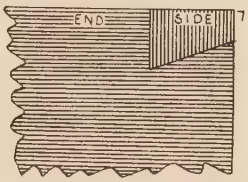

1
GRAVE 217
END
SIDE
1:4 SQUARE END

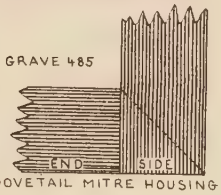

END
SIDE
6

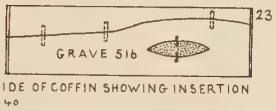

GRAVE 473.
END
SIDE
1:4 MITRE HOUSING

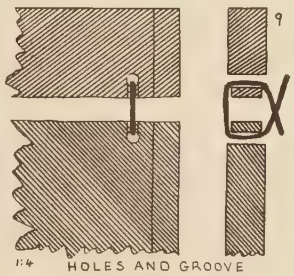

4
GRAVE 557
SIDE
END
1:4 SHOULDER MITRE

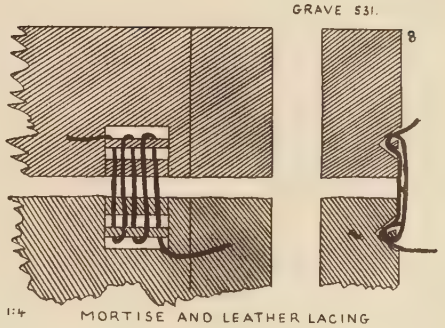

3
GRAVE 214.
END
SIDE
1:4 MITRE

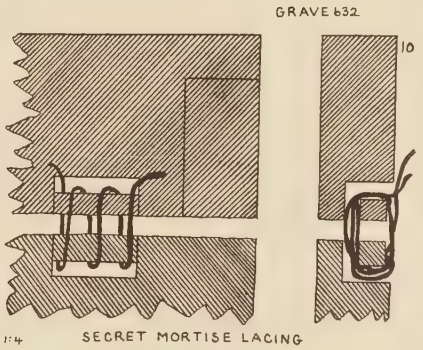

END
SIDE
7

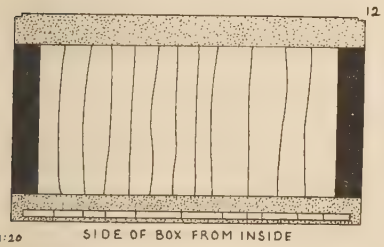

GRAVE 485
END
SIDE
1:4 DOVETAIL MITRE HOUSING

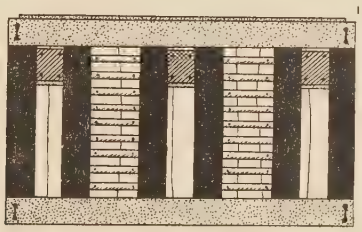

23
GRAVE 516
SIDE OF COFFIN SHOWING INSERTION
1:40

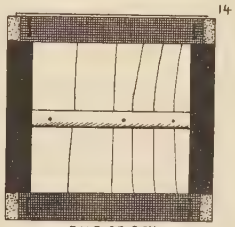

GRAVE 553.
9
1:4 HOLES AND GROOVE

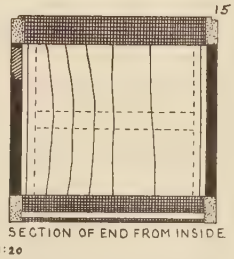

GRAVE 531.
8
1:4 MORTISE AND LEATHER LACING

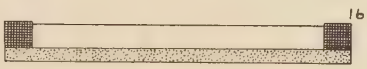

GRAVE 632.
10
1:4 SECRET MORTISE LACING

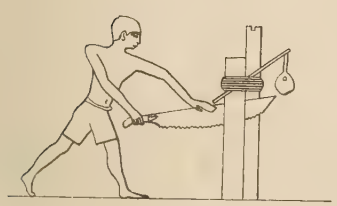

12
1:20 SIDE OF BOX FROM INSIDE

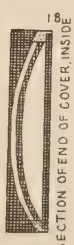

13
1:20 FRONT OF BOX

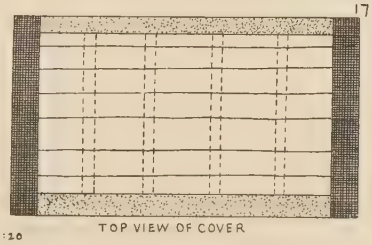

14
1:20 END OF BOX

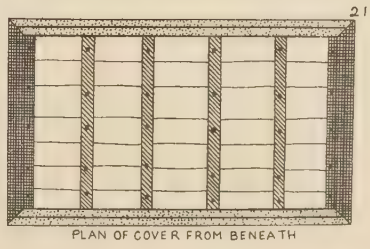

15
SECTION OF END FROM INSIDE
1:20

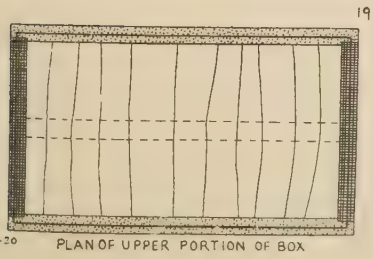

16
1:20 SIDE OF COVER




18
SECTION OF END OF COVER INSIDE


17
1:20 TOP VIEW OF COVER


21
1:20 PLAN OF COVER FROM BENEATH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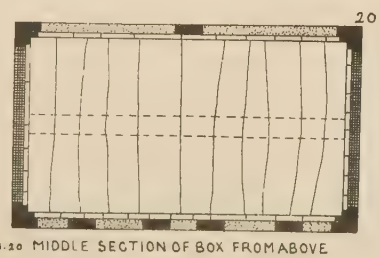
1:20 PLAN OF UPPER PORTION OF BOX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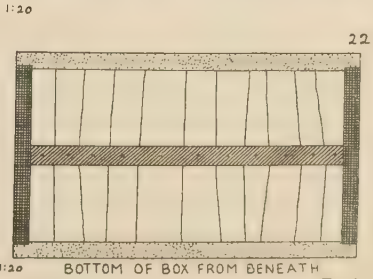
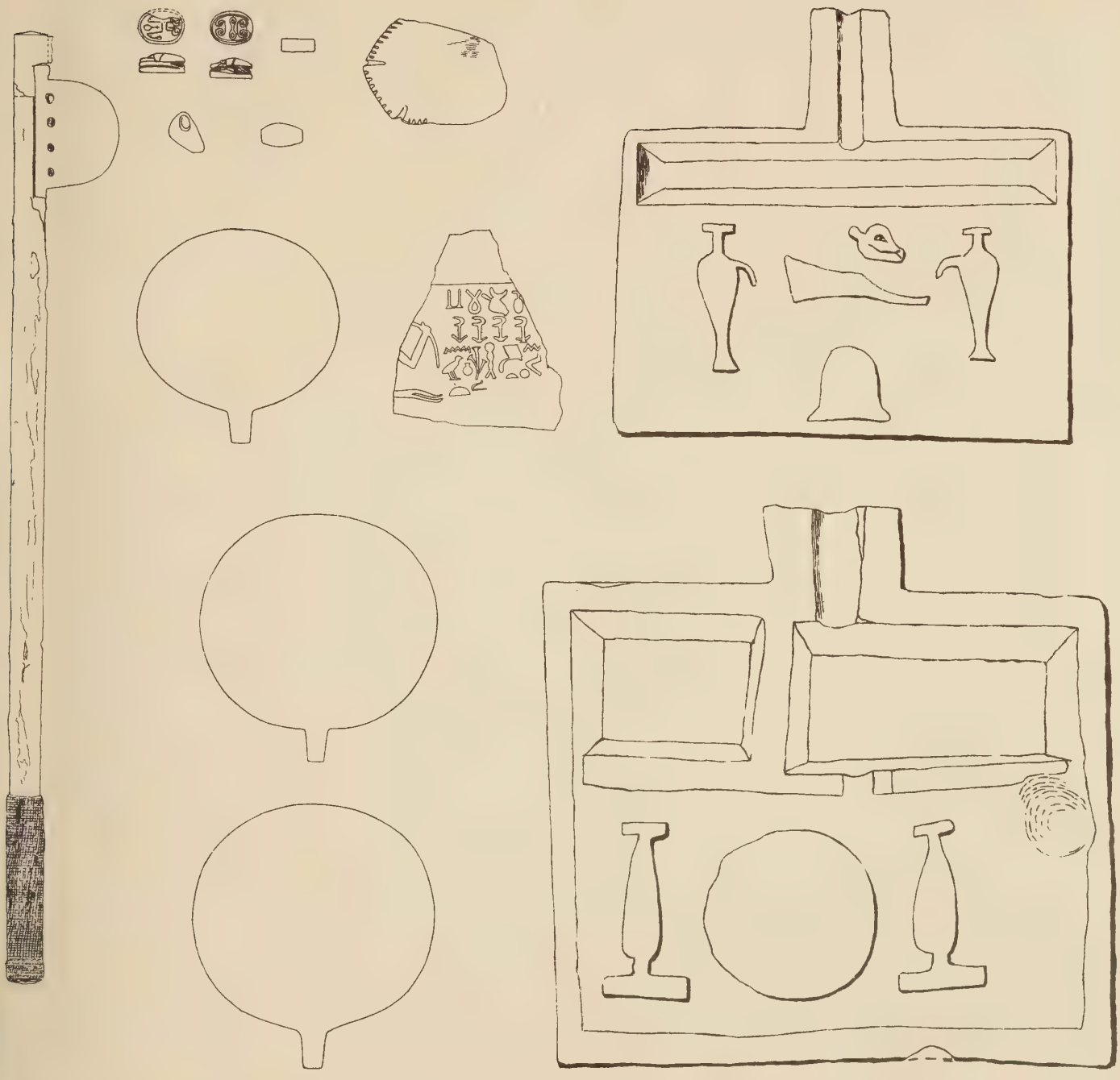
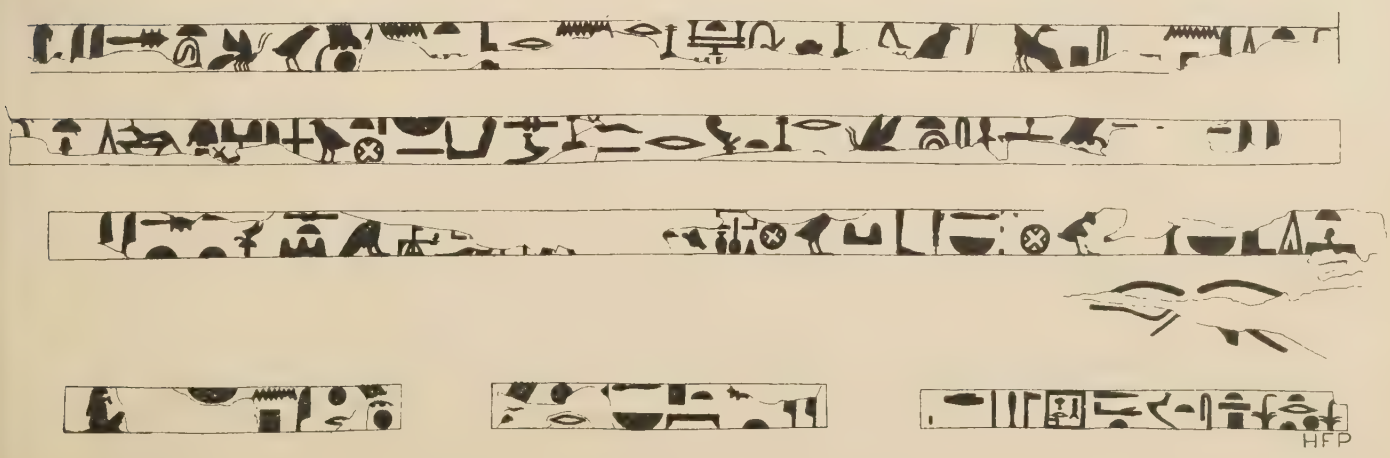
1:20 MIDDLE SECTION OF BOX FROM ABOVE

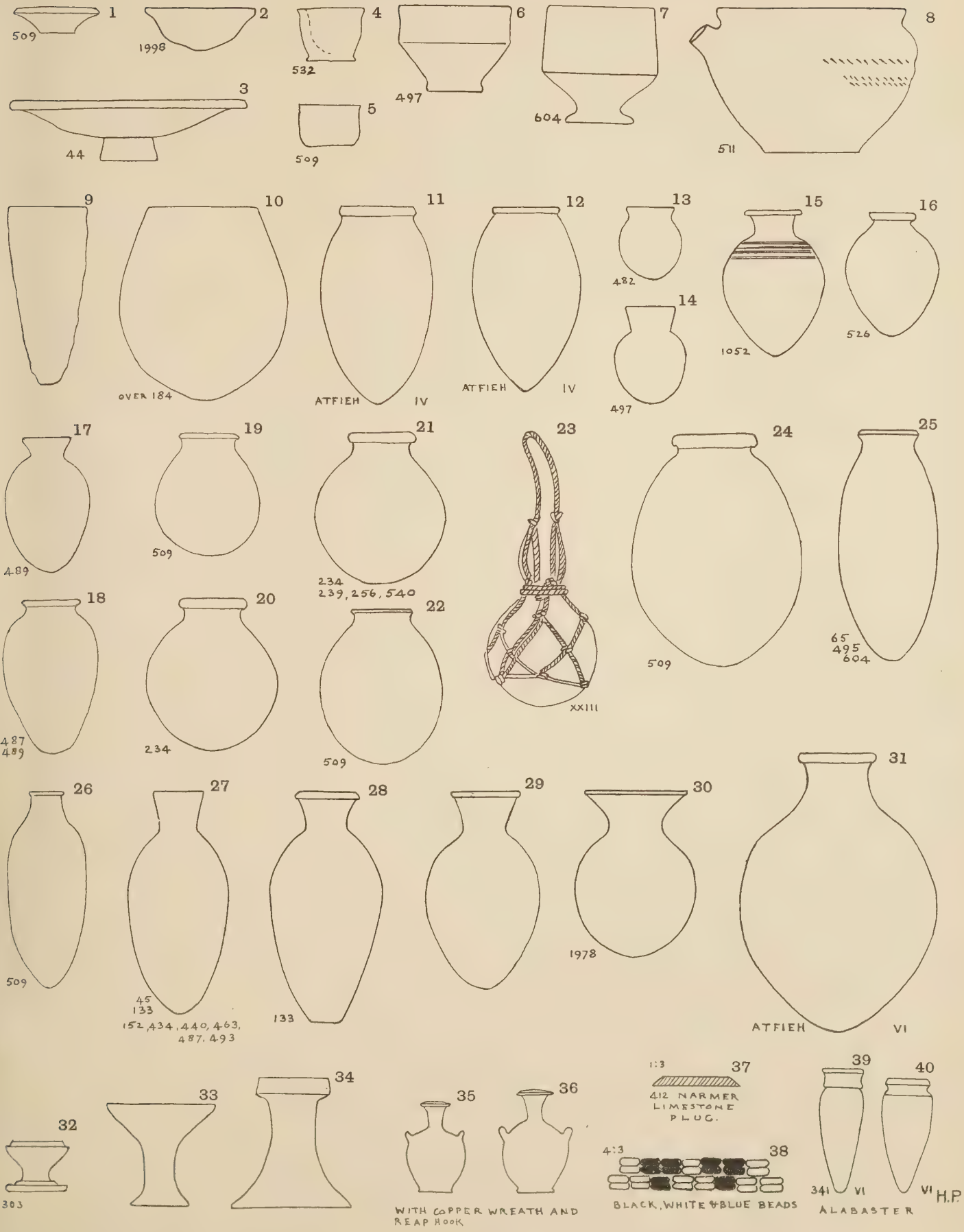

22
1:20 BOTTOM OF BOX FROM BENEATH

E.M.





HFP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OVER 184
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152, 434, 440, 463, 487, 493
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ATFIEH VI
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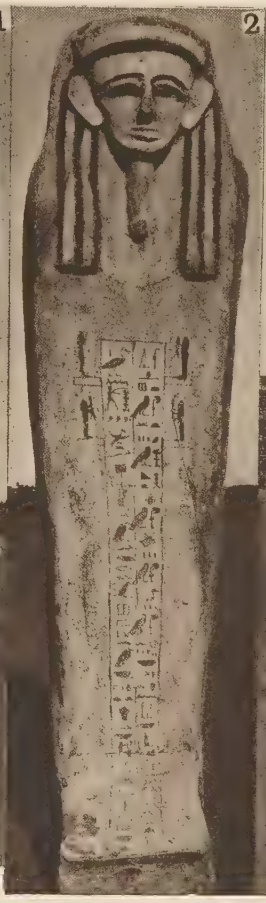
WITH COPPER WREATH AND REAP HOOK
1:3
37
412 NARMER LIMESTONE PLUG.
4:3
38
BLACK, WHITE & BLUE BEADS
39
341 VI
40
VI
ALABASTER
H.P.

No	SHAFT N	E	D	CHAMBER N	E	H	BODY Hd	F	Sx	COFFIN L	B	D	Th	HEAD REST	POTTERY T, TARKHAN I P. PL. XXVII	
44										Broken					T.23d,54d,61	Disturbed
45	30	90	90				N	E	F						P27 P3	DISSEVERED BODY. MUCH LINEN
50	30	105	130	W	48	105	15	N	up	69	14	14		CLASS		Disturbed
65	27	87	60					N	E	M	67	15	14	B	P25	TRACES OF SHROUD
133	27	84	90	W	23	84	20	N	up	M					P27 28	CYLINDER BEADS, GREEN GLAZE
								N	up	F						ABOUT 60 JARS IN SHAFT.
								N	up	F						
134											Pieces				P27	Disturbed
152	39	92	157	S	39	72	72	3 BODIES			COFFINS					Bones decayed
164	36	110	140	S	36	80		"			"					
				at foot of shaft				N	up	F				+		
								N	up	F						
234	18	84	25					N	E	F	72	16	18	1·3	T.23g P20,21	IN NE OF COFFIN A PLAITED WIG. (TARKHAN I, XXVII)
239	32	66	41					N	E	ch.	48	14	12	1·1	P21	BRACELET OF CARNELIAN DISC BEADS ON EACH WRIST
256	48	108	48					N	W	M	65	11	12		P21	BOW + 2 ARROWS UNDER BODY. SCARAB BIT OF PALETTE PL. XXVI. 7
427	29	77	132						F. ch.		fragments			B		
430	42	142	180	W	60	109	60	N	E	F						LINEN. SHAFT MOUTH FULL OF STONES + BRICKS.
433	28	93	57					N	W	F	69	13	13	1·3		LINEN.
434	32	100	108	W	22	99	26	N	up	F	decayed				P27	
436	31	83	72					N	up	M	71	13	14			LINEN. REED MAT
438	36	88	128	W	24	84	36	N	E	M	decayed			B		
439	41	96	126	W	19	96	19	N	E	ch.	"					QUARTZITE CORN GRINDER N. OF HEAD
440	32	104	84	E	24	84	48	N	up	F	63	11	16	13	P27	LINEN. THIN STICK WEST OF COFFIN
441	32	94	70					N	E	ch.	69	13	16	1·2	+	"
442	60	67	100					N	E	M						
								N	E	M						
								N	W	F						
460	48	120	126					N	E	F						5 CALCULI IN PELVIS.
								broken								
								N	E	F						
461	49	75	132	W	27	87	27	N	E	F						
463	27	79	66	E				N	E	M						WRAPPED IN TWIGS
				in shaft				N	E	M					P27	
464	36	80	60	W	37	99	36	N	up	F				VII		
487	36	84	72					N	E	M	decayed			VII	P18,27	
488	36	80	80					N	E	F	decayed					LINEN disturbed
489	34	60	60					N	W						P17,18	LARGE BALL BEADS disturbed
490	36	84	60					N	E	M	decayed					QUARTZITE CORN GRINDER N. OF COFFIN
491	27	74	20					N	up	M						
492	24	60	24					N	W	?						
493	38	84	59					N	E		decayed				P27	TRACES OF INSCRIPTION. disturbed
494	30	86	75					N	E		traces					
495	31	68	54					N		M	decayed			as	P25	
497	37	79	60					N	E	M	71	13	13	1·6 1·9	2.5 P6,14	THICK LINEN. LONG BOW. CARTONNAGE MASK 2 SAUCERS ⊂ WITH BURNT STRAW, IN PIT.
509	32	66	36	N 93E 107	70	43		N	E	F	72	13	19	1·0	2.5 P19	PLAN PL. XII, 14
				CHAMBER B				N	E	F	68	16	16	2·		MUCH LINEN. SCARABS & BEAD ON NECK. XXVI, 2,3,4.
								N	E	M	71	15	18	1·7		AXE ON LID, XXVI, 1. TARKHAN I, VI, II, 12, 13. BOW ON WEST.
								S	W	ch.	23	15	10			BARREL TOP, 10·3 HIGH MID, 7·7 HIGH SIDES. BYNECK, PEBBLE, XXV, 15
				CHAMBER D 70	87	41		N	E	M	73	14	16	3·1		THICK LINEN LONG STICK IN COFFIN.
								N	E	F	69	14	16	2·0	B P22	" "
								N	E	ch.	19	6	5	1·0		AT NECK GLAZED & SARD BEAD, XXVI, 6.
				CHAMBER C 43	84	37		N	E	M L					T54 p. P5,24,26	COFFIN LID INSCRIBED PL. XV. STICK WEST OF BODY.
526	43	77	67	W	31	86	36	N	E	M L	68	16	5		2.6 P16	POT IN N.W. OF COFFIN
534	24	87	60					N	E	ch.	45	12	12			
540	20	88	85					S	E	M	67	14	18	1·5	VII P21	THICK PADS OF LINEN.
550	33	95	75								85	19	19	1·9	VII	LONG STICK ON COFFIN.
601	43	100	150	W	30	100	36	N	E	M	80	20	16		VII	LARGE GREEN BALL BEADS. BRICKS 14·5×7·5×2·5
603	30	85	130	S	40	80	35 W	N	E	M	75	19	16		VII	SMALL ROUND GREEN BEADS.
								N	E	M	NONE				VII	
							E	N	E	F	75	19	16		VII	
604	32	80	150	S	51	80	37	N	E	M	decayed				P7,25	BRICK CLOSING, 13×6·3×3·1 35 JARS IN SHAFT.
								N	E	F						
605	35	107						N	E	M						
				SUPERPOSED				N	E	M						
								N	E	F	74	14			VII	

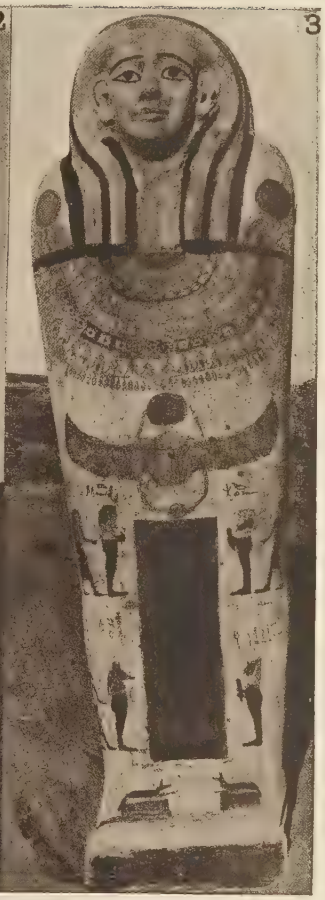
F. P.

1 : 6 NORTH CHAMBER

PEF-DU-BAST



KHNUM-EM-HAT



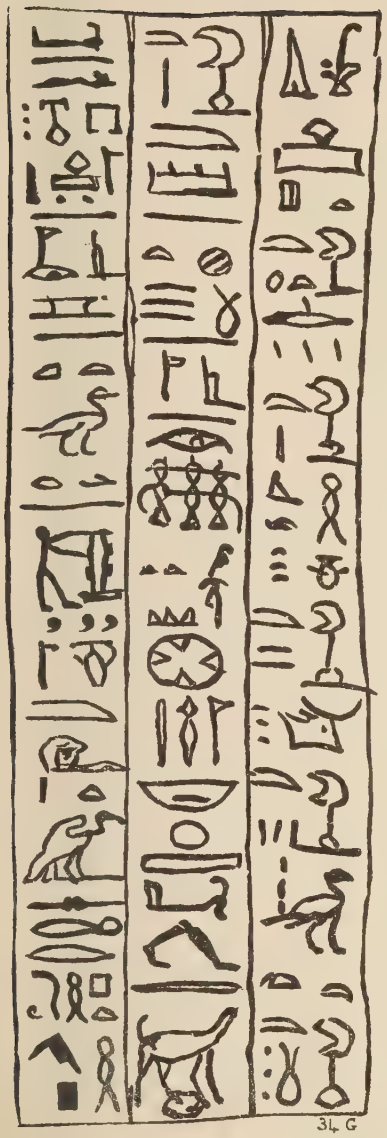
MERNEIT

COFFINS

1 : 5 NORTH CHAMBER

1 : 6 SOUTH CHAMBERS

1:3



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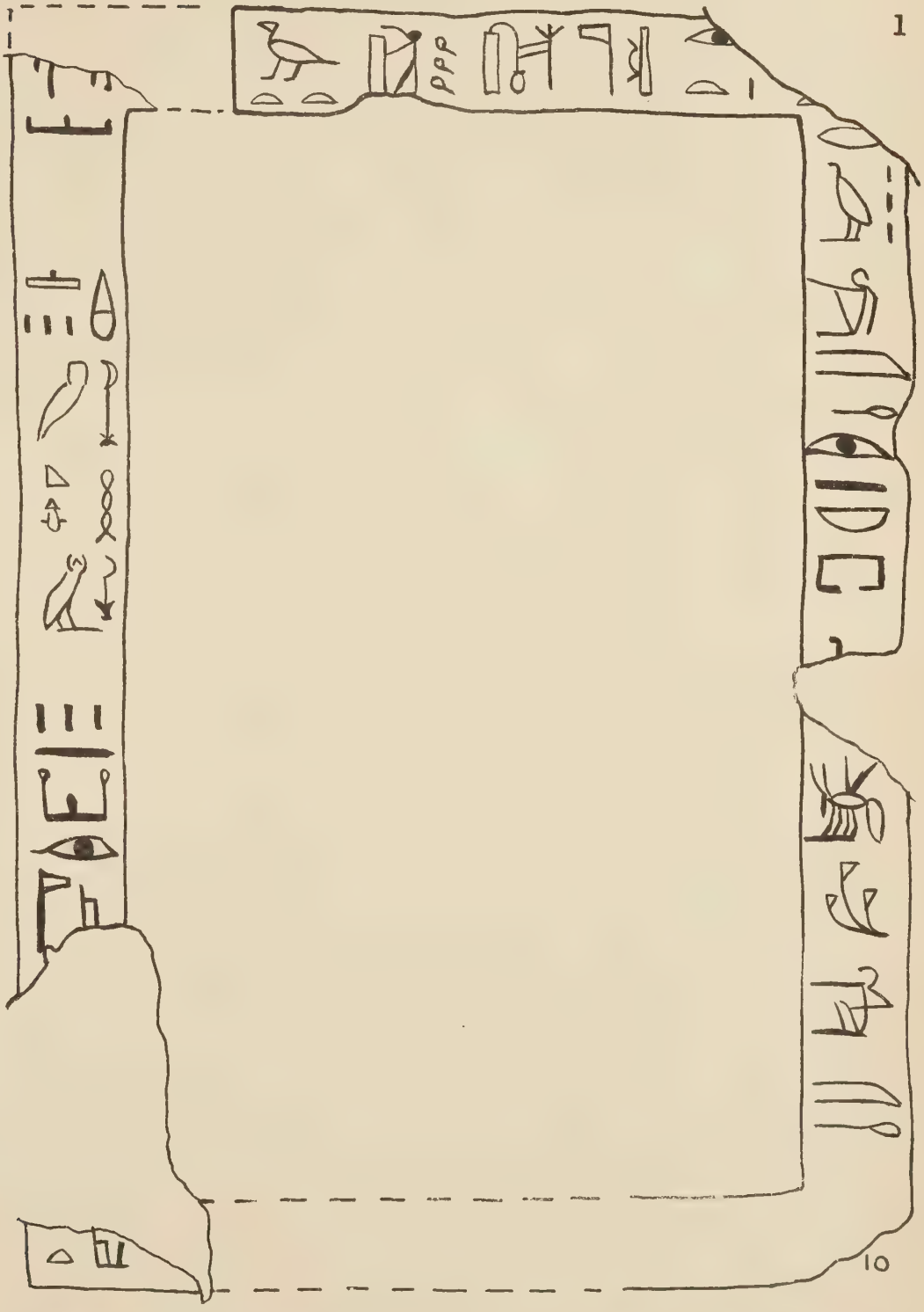
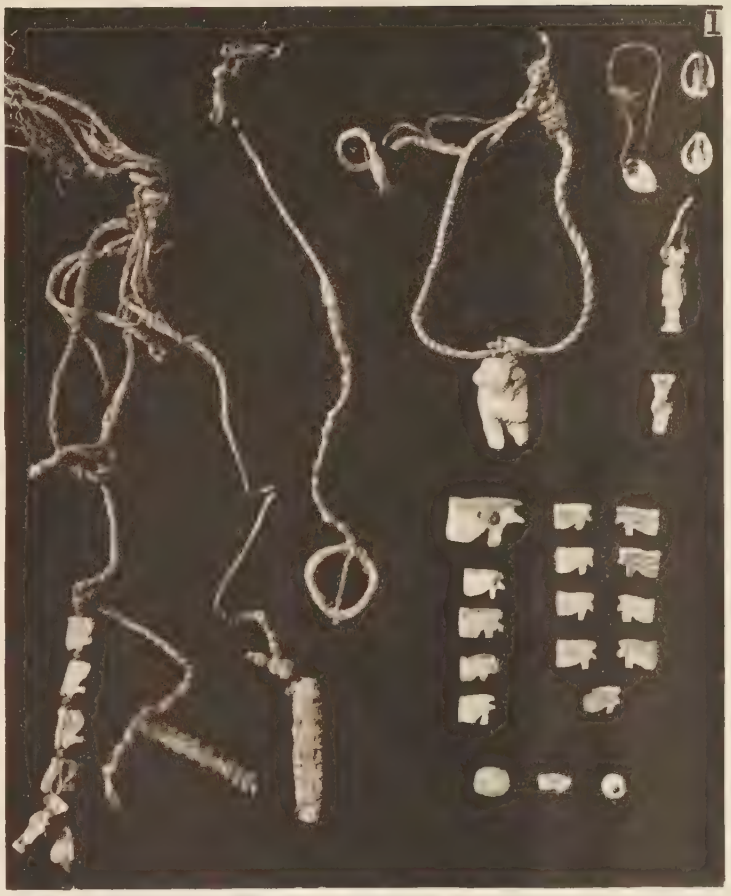
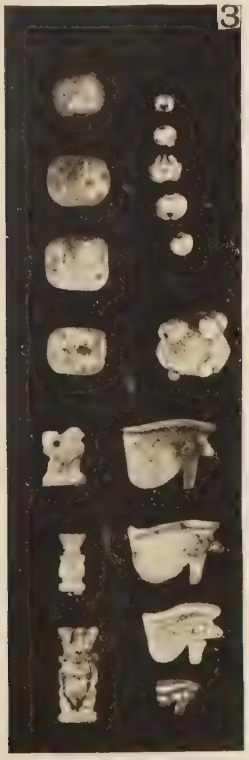


1 : 3 BEAD MASK AND SCARAB



1 : 3 AMULETS, TOMB 25



3 : 4 AMULETS, 69

1 : 2 AMULETS

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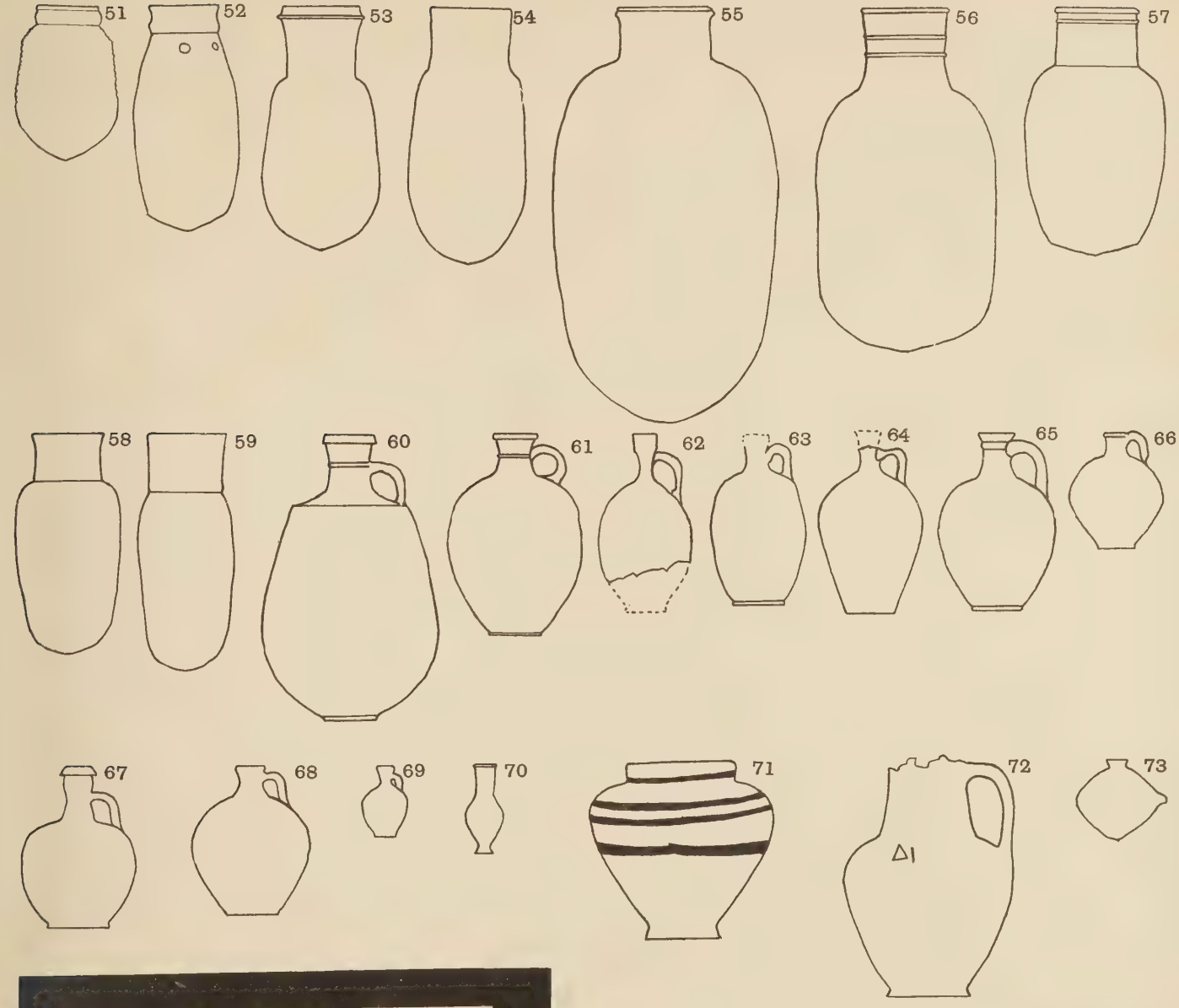
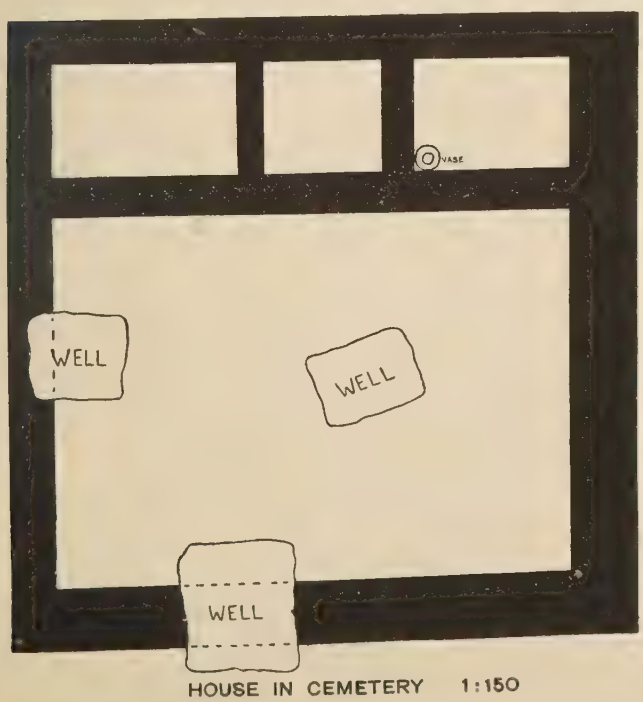
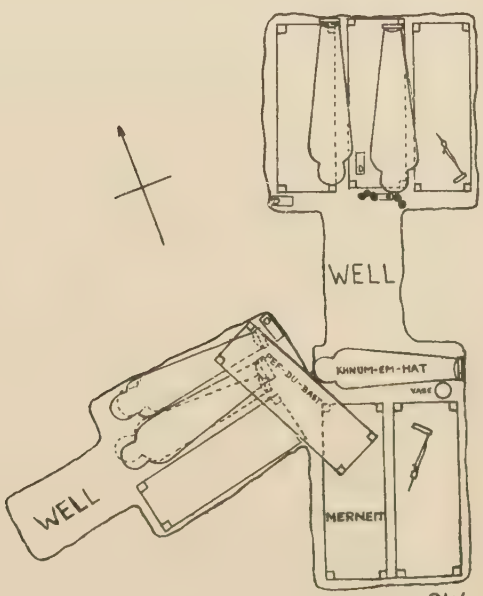
G.W.





HOUSE IN CEMETERY 1:150



TOMB PLAN. K A 34. 1:75 G.W.

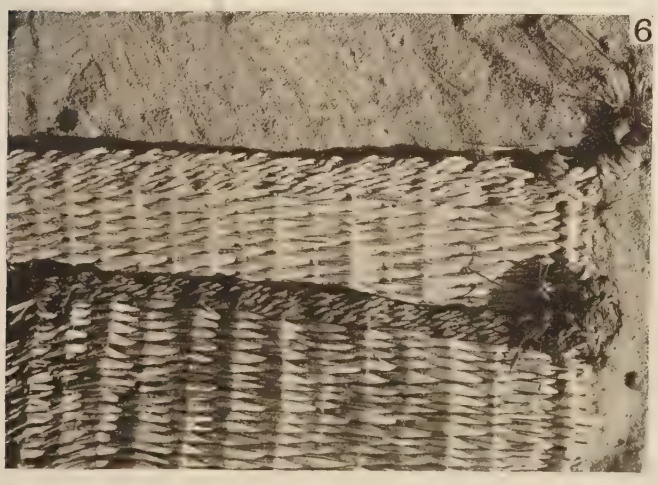
GRAVE
GRAVE
GRAVE
GRAVE
G.A.W.
R.E.

2:3 GLAZED FIGURE

VIEW OF TEMPLE

WESTERN SHRINE AND APPROACH

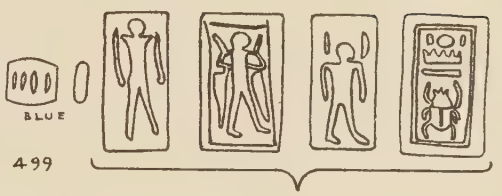
EASTERN SHRINE AND APPROACH

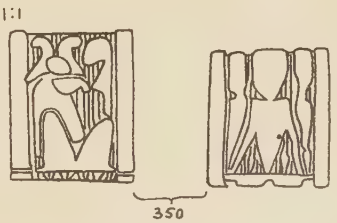


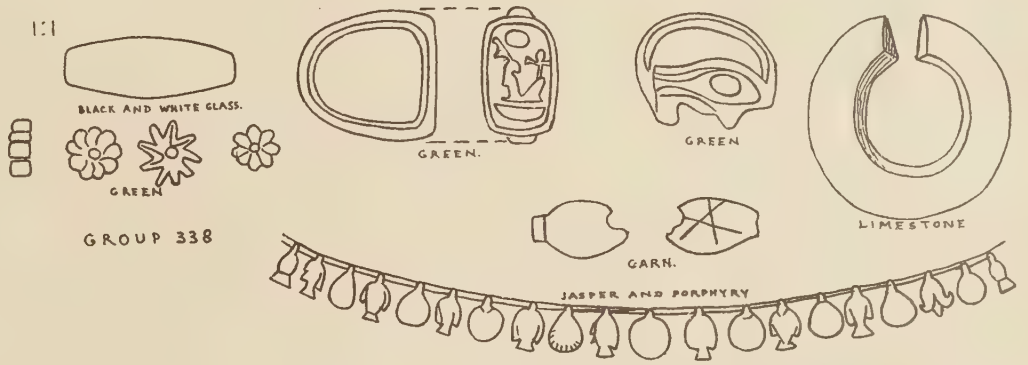
MODERN AND ANCIENT MATS

EASTERN SHRINE

1:1

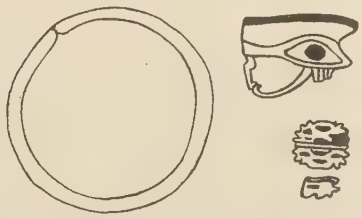






1:2 GROUP 380.

1:2 GROUP 358



1:1 GROUP N.N.

H.F.P.

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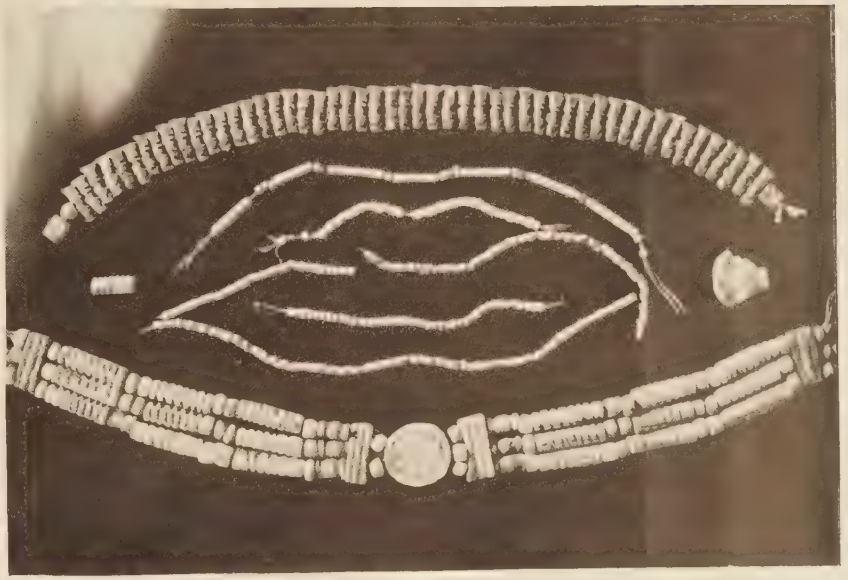

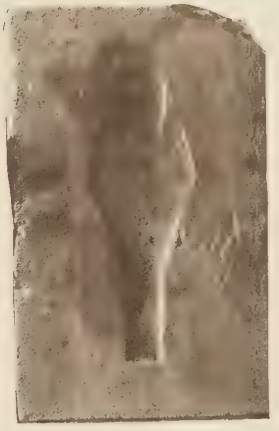

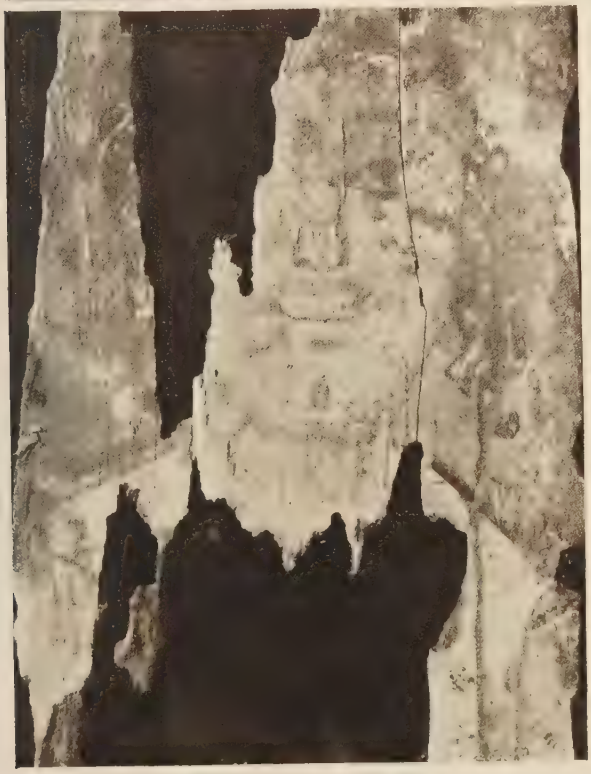

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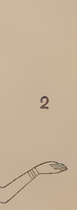
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E.M.

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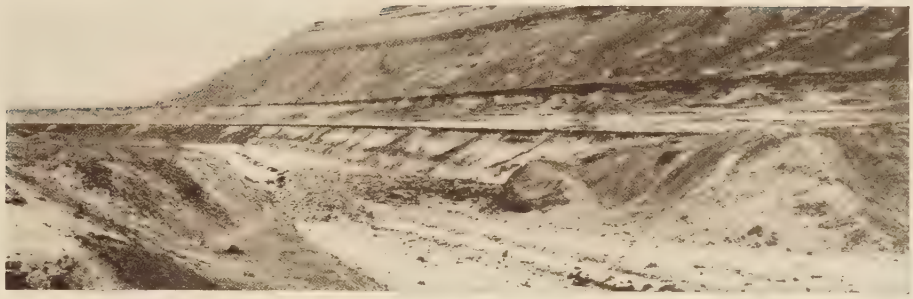
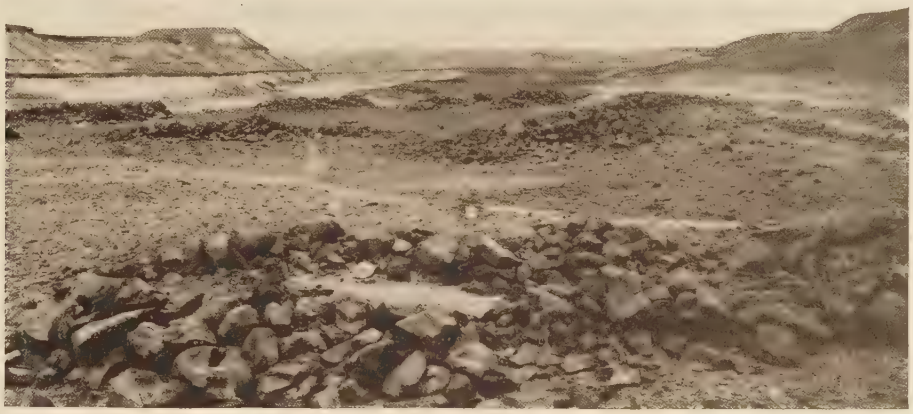
WESTERN SIDE OF DAM



HUTS OF WORKMEN WEST OF DAM

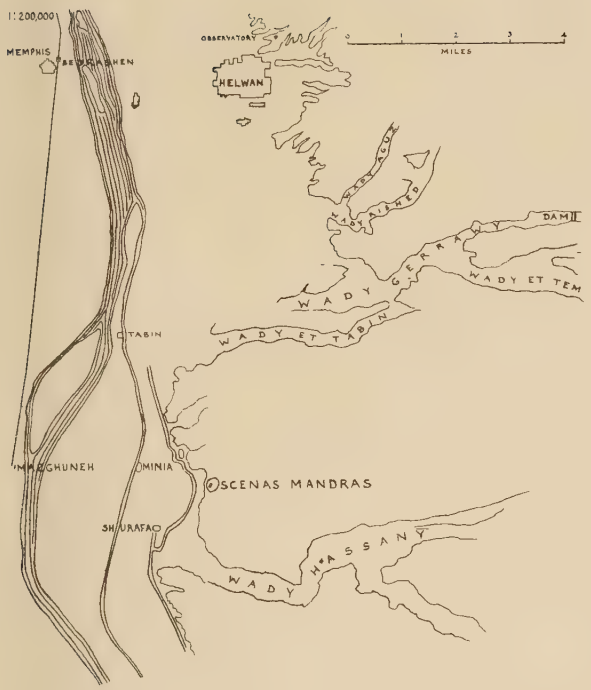


EASTERN FACE OF DAM LOOKING SOUTH

ARROW SHEWS STREAM DIRECTION

FILLING FROM X TO X

SECTION OF DAM LOOKING NORTH


1:200,000
MEMPHIS
BEDRASHEN
OBSERVATORY
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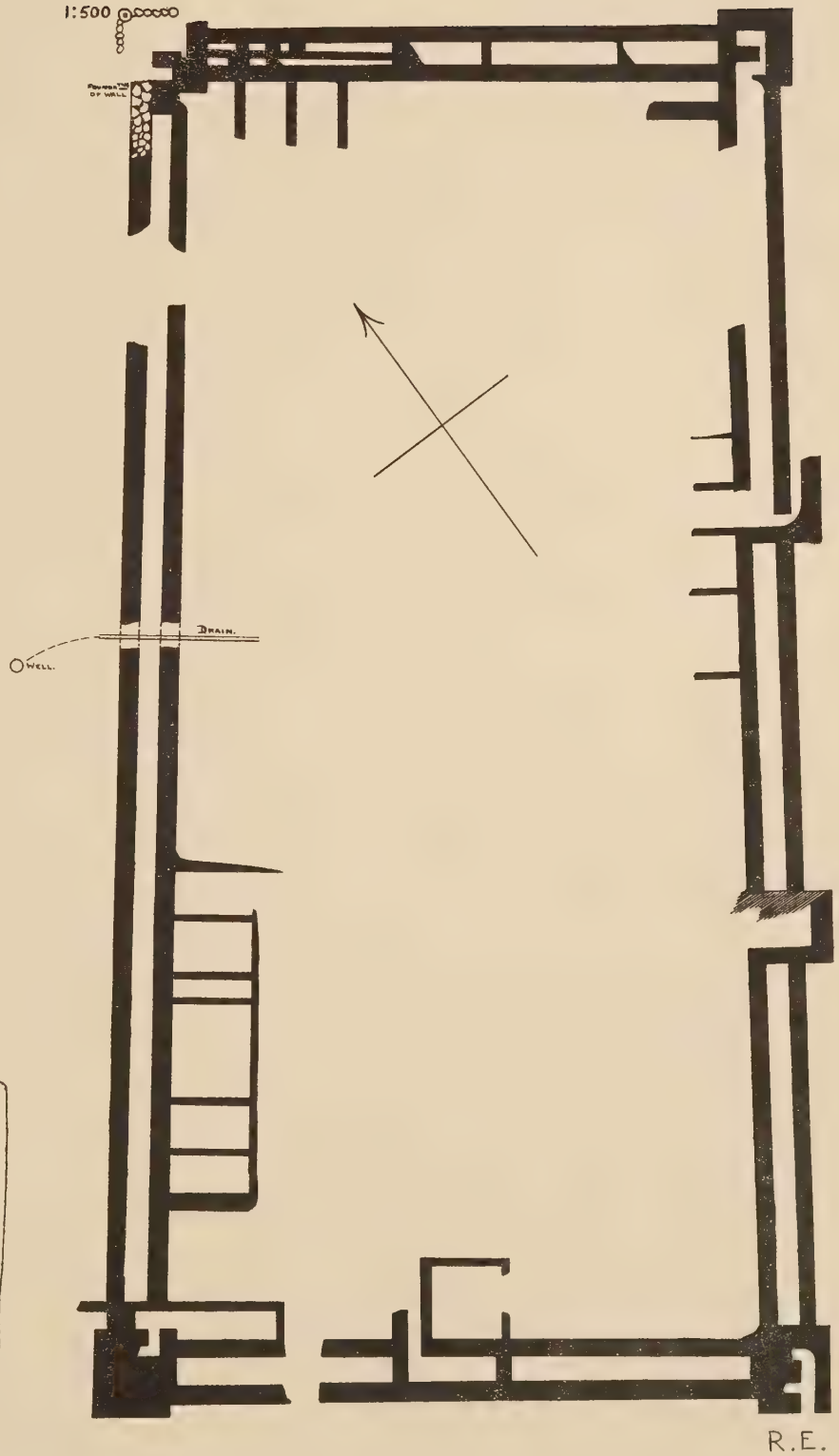
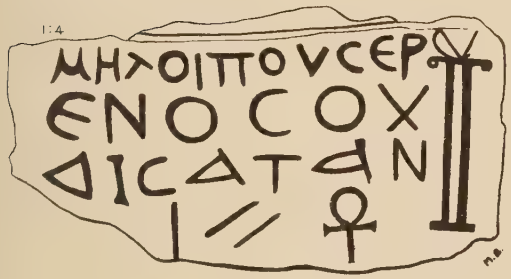
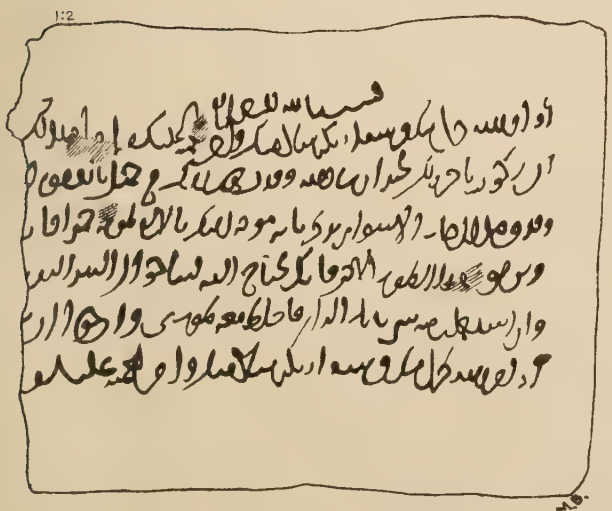
MILES
HELWAN
WADY GERRAWY
DAM II
WADY ET TEM
ABUSIR
WADY ET TABN
TABIN
IMHABGHUNEH
MINIA
SCENAS MANDRAS
SHURAFAO
WADY HASSANY


1:500
POSITION OF WALL
DRAIN.
WELL.

R.E.


1:4
MHXOIITOVCEP
ENO COX
AICATAN
M.B.


1:2
M.B.

CEMETERY.
GRANITE BLOCK
FORT.
R.E

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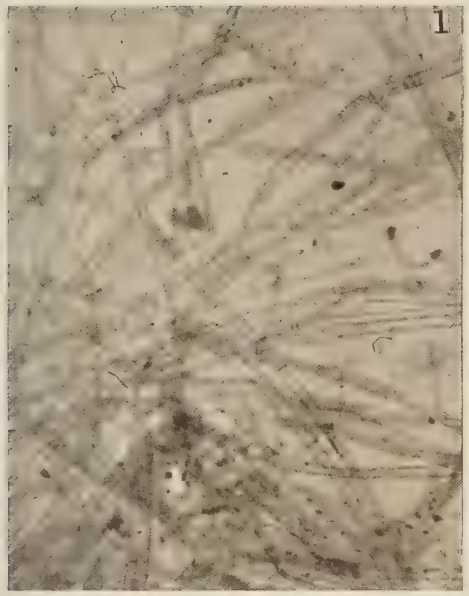
Number of Skull	Glabello-Occipital Length	Ophryo-Occipital Length.	Maximum Breadth.	Minimum Frontal Breadth	Basi-Bregmatic Height.	Bi-zygomatic Breadth.	Upper Facial Height	Total Facial Height	Basi-Nasal Length	Basi Alveolar Length	Orbital Breadth (right)	Orbital Breadth (left)	Orbital Height (right)	Orbital Height (left)	Palatal Length	Palatal Breadth	Nasal Height	Nasal Breadth	Bigonial Breadth	Height of Symphysis	Height of Ramus	Circumference of Skull	Right Femur (oblique)	Left Femur (oblique)	Right Tibia (without spine & malleol.)	Left Tibia	Right Humerus (total)	Left Humerus	Right Ulna (total)	Left Ulna
1	182	180	139	98	138	133	75	129	105	95	39	39	36	37	51	39	53	25	95	38	60	521	–	–	–	–	–	–	–	–
2	160	160	147	105	137	135	67	119	98	95	39	38	32	31	49	40	67	27	101	34	53	486	–	–	–	–	–	–	–	–
3	186	185	153	95	133	133	72	116	100	97	40	40	34	33	50	41(?)	51	25	89	28	56	548	–	–	–	–	–	–	–	–
4	182	179	141	100	131	134	70	–	100	99	39	40	32	32	55	33	54	23	–	—	–	523								
5	187	186	141	94	137	136	72	122	103	93	41	39	34	34	52	43	53	24	99	29	52	531	449	453	362	363	322	317	–	–
6	176	175	135	94	136	134	67	–	98	92	38	37	34	34	50	43	52	26	–	–	–	504	–	–	–	–	–	–	–	–
7	191	187	145	100	139	–	72	102	109	98	–	39	–	37	53	42	60	25	–	25	51	—	485	485	–	404	–	–	–	–
8	168	166	134	95	132	118	67	113	99	91	–	37	38	37	46	35?	50	22	85	27?	42	489	444	453	367	362	335	328	277	279
9	184	183	125	95	128	124	65	114	101	96	38	39	33	32	47	43	54	26	103?	31	50	507	463	462	368	371	332	329	–	–
10	176	175	138	92	132	127	70	115	97	103	37	37	33	33	56	37?	56	26	102	34	51	510	432	433	348	349	306	312	228	227
11	185	183	138	91	136	131	72	120	104	97	38	38	34	34	53	41	53	24	108	30	54	515	–	–	–	–	–	–	–	–
12	181	179	136	101	133	–	68	114	102	95	44	44	33	33	49	41	52	27	104	30	58	513	428	431	345	342	–	–	–	–
13	187	187	136	99	139	131	68	115	104	98	41	40	33	32	50	43	52	30	104	31	49	520	–	460	365	–	–	–	–	–
14	191	190	123	92	138	122	65	110	106	97	41	40	33	35	48	39	52	27	75	26	51	515	431	–	346	–	–	–	–	–
15	182	181	137	93	129	127	71	–	100	94	39	38	34	34	47	42	54	23	101	34	45	512	452	452	369	366	331	326	–	–
16	182	179	140	101	136	136	70	120	108	101	37	39	33	33	48	46	52	25	95	32	53	513	454	461	369	372	332	334	294	–
17	179	179	141	97	131	130	69	112	102	93	42	41	35	35	50	40	50	26	90	28	52	–	401	406	341	341	–	–	–	–
18	184	183	138	95	130	131	72	121	102	96	39	38	35	35	50	38	55	25	101	28	50	516	430	432	347	345	–	331	–	270
19	190	187	134	94	131	–	72	119	105	103	42	42	33	33	55	33	50	24	100	35	50	525	432	441	350	348	–	–	271	267
20	179	175	135	93	136	131	60	103	100	96	40	41	31	32	50	43	50	28	101	29	51	500	449	455	353	352	309	310	278	275
21	174	172	151	98	135	135	67	115	101	93	37	39	35	35	49	43	53	25	102	30	51	520	489	–	391	389	–	320	290	289
22	204	201	145	99	131	136	75	129	101	103	39	41	35	36	56	45	56	24	113	41	52	566	470	468	375	378	338	338	277	275
23	193	191	156	105	135	139	76	121	106	96	42	42	39	39	49	38	57	26	104	27	54	559	495	497	405	407	351	348	296	301
24	179	179	129	93	125	124	63	104	96	89	36	37	33	33	53	38	45	25	100	27	40	504	–	435	349	347	301	289	257	–
25	183	177	137	92	137	138	73	–	108	105	41	40	35	35	48	45	53	29	–	–	–	509	400	401?	326	327	305	300	247?	–
26	178	178	143	99	131	131	64	109	99	97	38	37	33	33	52	37	50	25	92	28	48	517	445?	–	368	369	320	–	–	258
27	183	181	141	94	134	130	70	118	102	93	38	37	34	34	51	39	52	26	95	31	51	521	496	493	394	399	329	317	284	278
28	177	177	140	92	121	124	69	116	92	89	40	38	37	36	48	38?	53	22	82	30	48	510	424	428	328	332	–	–	–	–
29	181	180	137	90	130	118	63	113	100	90	38	37	31	31	46	38?	47	26	100	32	45	509	431	428	354	357	312	308	268	–
30	203	199	136	103	135	136	72	118	112	100	39	40	35	35	48	44	53	35	106	32?	48	556	–	446	380	378	–	–	–	293
31	184	178	138	90	141	129	69	–	109	108	37	38	36	36	54	40	55	25	–	–	–	506	448	452	354	354	324	320	262	263
32	184	181	143	95	125	125	64	104	96	97	38	39	35	34	50	38	50	24	93	26	48	520	406	–	–	328	297	294	–	–
33	185	182	143	94	134	127	69	119	101	93	42	40	36	34	47	44	51	27	85	32	59	527	456	455	366	369	332	330	270	268
34	192	191	143	98	133	128	66?	115	107	97	40	40	33	33	49	36?	50	24	99	30	49	537	451	450	378	375	315	318	275	274

Number of Skull	Glabello-Occipital L	Opisth-Occipital L	Maximum Breadth	Min. Frontal Breadth	Basi-Bregmatic Ht.	Bi. Zygomatic Breadth	Upper Facial Height	Total Facial Height	Basi-Nasal Length	Basi-Alveolar Length	Orbital Breadth (right)	Orbital Breadth (left)	Orbital Height (right)	Orbital Height (left)	Palatal Length	Palatal Breadth	Nasal Height	Nasal Breadth	Bigonial Breadth	Height of Symphysis	Height of Ramus	Circumference of Skull	R. Femur (oblique)	L. Femur	Right Tibia (without spine & malleolus)	L. Tibia	R. Humerus (total)	L. Humerus	R. Ulna (total)	L. Ulna
35	184	184	143	93	141	126	68	116	100	87	39	39	34	33	47	41	50	25	98	31	63	536	452	457	351	350	323	–	277	253
36	181	181	138	98	137	142	72	125	108	102	41	41	35	36	49	45	57	26	115	35	60	521	464	465	377	374	323	320	–	–
37	195	193	138	94	139	130	68	117	106	99?	37	37	33	32	52	43	53	28	106	28	57	543	442	438	352	351	337	334	–	–
38	184	180	147	96	133	136	71	121	99	84	38	40	37	38	47	44	56	25	94	30	51	523	452	451	364	365	340	335	276	273
39	186	186	145	93	131	124	73?	124	103	101	37	40	35	34	53	41	55	26	96	32	53	532	428	428	357	357	302	298	260	254
40	180	179	132	91	133	119	63	112	98	89	36	36	32	32	45	39	47	26	87	31	46	500	416	419	352	343	–	300	–	249
41	179	178	129	94	127	126	71	116	93	92	39	40	37	37	50	44	49	25	91	30	51	507	445	438	352	351	302	292	258	257
42	175	174	130	96	133	123	53	112	102	88	41	40	34	34	47	40	51	25	84	29	48	497	430	434	338	342	319	305	261	260
43	189	185	146	98	133	139	70	120	106	104	40	40	37	37	51	40	55	26	93	28	51	–	470	472	400	400	335	330	281	279
44	180	180	135	101	141	128	65	112	103	93	38	38	32	33	47	44	50	23	91	29	45	514	450	452	375?	369	–	–	260	262
45	178	176	138	95	127	125	65	108	101	91	40	39	36	36	44	41	50	23	89	26	49	501	421	422	342	347	301	297	267	272
46	180	178	131	88	126	121	64?	110	101	95?	37	35	34	35	49	42	51	23	97	30?	52	509	429	426	344	347	305	299	255	–
47	174	173	134	91	124	120	61	100	96	93	39	38	34	34	47	40	47	24	94	27?	48	504	459	460	390	387	338	328	304	299
48	171	170	136	94	120	124	68?	112	99	96	41	41	38	39	49	40	52	25	93	29	45	498	457	452	371	373	327	325	279	–
49	196	194	149	99	136	126	74	118	103	98	38	39	34	34	48	41	58	24	99	30	49	552	449	449	341	342	312	310	255	254
50	184	180	140	97	130	129	64	106	105	102	39	39	31	31	–	41	50	26	101	27	55	513	435	438	363	355	311	–	268	262
51	181	181	135	95	132	123	67	110	97	89	37	38	34	36	44?	38	55	23	94	27	42	516	421	421	–	337	299	293	248	245
52	171	170	138	96	123	123	64	–	94	90	36	37	33	34	48	41	48	20	–	–	–	503	385	385	308	308	287	284	228	226
53	191	190	145	97	140	125	72	121	99	89	40	38	40	40	48	31?	54	22	91	32	43	540	422	424	325	327	293	290	243	241
54	183	180	141	97	132	130	72	123	103	94	39	37	32	33	50	39	52	26	99	35	58	523	492	491	383	384	349	345	283	278
55	173	173	136	94	126	122	62	116	101	78	40	36	36	34	50	37	49	24	89	28	50	501	478	477	384	384	348	339	283	–
56	187	186	138	94	133	128	65	111	103	102	39	38	33	32	51	42	52	29	102	29	50	530	462	464	382	382	325	318	–	–
57	179	177	138	94	133	133	68	114	102	96	39	39	34	36	51	42	57	28	95	27	54	511	452	452	363	359	316	304	270	–
58	181	181	135	90	130	127	67	112	96	86	38	38	37	38	44?	42	53	24	99	25	46	511	406	412	333	334	286	283	252	253
59	180	179	139	97	126	127	60	107	96	97	–	36	–	33	51	39	44	25	93	28	43	515	499	500	402	398	354	349	279	285
60	189	188	141	96	134	132	70	116	100	91	43	41	33	34	51	42	55	27	96	34	53	532	444	447	379	371	319	318	–	–
61	187	185	137	91	124	–	64	110	98	93	39	39	34	36	49	45	55	25	100	27	55	522	489	484	377	377	328	322	284	288
62	185	181	142	105	134	137	70	121	105	106	42	43	32	33	58	41	51	28	101	34	54	530	476	469	400	405	348	344	–	–
MEAN	182·8	181·0	138·9	95·8	132·2	128·9	68·0	114·9	101·5	95·2	39·2	38·9	34·1	34·4	49·8	40·8	52·4	25·4	96·4	30·1	50·7	518·5	447·0	457·1	361·7	362·0	320·9	316·6	269·4	266·7

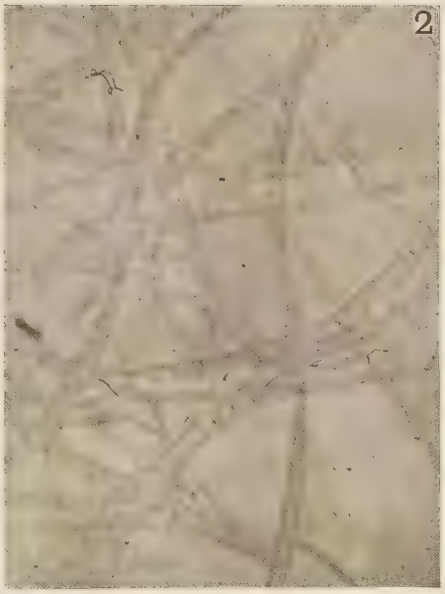
	MEN	WOMEN		MEN	WOMEN
Breadth-Length.	75·98	76·98	Right Orbit	86·99	91·34
Height-Length	72·32	72·62	Left Orbit	88·43	93·87
Breadth-Height	105·07	106·01	Palate	81·93	76·72
Nasal-Index	48·47	47·58	$100\frac{B-H}{L}$	+ 3·66	+4·36

R.E.

Number of Skull	Glabello-Occipital L.	Ophryo-Occipital L.	Max. Breadth	Min. Frontal Breadth	Basi-Bregmatic Height	Bi-Zygomatic Height	Upper Facial Height	Total Facial Height	Basi-Nasal Length	Basi-Alveolar Length	Orbital Breadth R.	Orbital Breadth L.	Orbital Height R.	Orbital Height L	Palatal Length	Palatal Breadth	Nasal Height	Nasal Breadth	Bigonial Breadth	Height of Symphysis	Height of Ramus	Circum. of Skull	R. Femur (oblique)	L. Femur	R. Tibia (without spine & malleolus)	L. Tibia	R. Humerus (total)	L. Humerus	R. Ulna (total)	L. Ulna
63	167	167	130	91	122	120	64	112	95	85	38	38	31	31	44	38	52	24	99	30	40	486	–	–	–	–	–	–	–	–
64	181	181	135	101	123	126	69	111	97	93	43	43	36	36	51	40	54	25	93	28	45	510	–	–	–	–	–	–	–	–
65	183	183	133	92	129	–	61	–	98	90	–	39	33	33	49	35	46	23	–	–	–	515	–	–	–	–	–	–	–	–
66	182	182	139	95	127	124?	67	105	96	94	42	40	37	37	53	41	53	–	101	27	42	523	423	427	303	303	344	343	–	–
67	178	178	137	98	131	–	65	112	98	87	40	40	37	36	46	34	50	25	80	28	46	517	412	412	320	320	–	289	–	–
68	176	175	140	99	130	125	74	119	94	92	40	38	36	36	–	35	55	24	97	24	51	521	427	423	323	324	–	–	–	–
69	169	168	137	90	124	122	66	112	93	84	37	36	35	34	43	40	50	23	91	29	48	490	406	406	328	322	292	298	–	–
70	188	188	134	101	127	127	74	105	107	102	39	40	37	37	54	39?	59	28	96	–	47	526	–	407	–	303?	288?	–	–	–
71	179	179	139	93	135	–	67	115	102	96	37	–	33	–	51	40	53	25	96	28	53	512	421	430	347	348	–	–	–	–
72	175	175	135	97	128	122	61	104	92	90	38	39	33	33	49	39	47	23	93	23	47	505	407	406	307	304	292	289	–	–
73	181	181	127	98	124	122	70	113	95	89	39	40	39	39	45	38	55	25	88	28	46	510	–	–	–	–	–	–	–	–
74	174	173	136	96	125	125	60	105	97	92	38	38	31	31	48	40	48	23	95	24?	47	502	421	409	331	327	296	290	–	–
75	170	170	133	86	126	118	67	106	93	92	35	35	35	35	47	36	50	24	96	27	52	489	420	421	343	341	301	291	243	–
76	154	154	133	92	127	127	66	111	98	94	38	37	33	33	48	36	50	23	98	28	51		418	420	322	323	300	292	260	–
77	171	171	139	92	123	122	60	104	89	91	39	38	31	32	50	38	46	24	86	27	45	492	384	383	305	303	274	267	228	225
78	179	178	144	94	132	127	64	110	96	86	38	39	34	33	42	38	46	23	97	30	48	514	433	435	352	351	298	302	247	245
79	171	169	135	90	124	124	58	100	92	91	37	38	31?	31	46	42	45	23	95	25	43	491	393	399	317	313	277	270	–	–
80	186	186	138	94	137	123	73	112	104	95	39	39	36	36	50	39	54	23	93	28	49	521	425	427	339	341	304	301		
81	181	180	135	92	124	123	70	109	99	95	37	39	34	35	51	38	50	25	87	30	49	515	415	418	330	328	293	–	223	229
82	178	178	131	96	125	121	66	107	96	96	38	38	33	33	47	39	52	22	88	27	45	505	400	–	326	327	–	–	224	–
83	180	180	143	100	139	134	67	112	105	91	41	39	35	34	44	41	52	25	102	28	48	520	420	417	333	332	301	295	248	240
84	172	172	134	94	132	123	58	97?	95	88	38	37	34	34	43	40	46	24	89	26?	48	497	412	410	321	320	303	298	248	245
85	172	170	130	87	124	117	59	101	96	88	37	37	31	31	45	36	47	21	86	25	45	–	383	385	317	318	–	276	–	–
86	172	172	130	88	127	129	68	110	95	93	39	39	36	35	45	37	55	27	84?	30	49	532	416?	417	328?	328	294	290	233	–
87	177	177	140	92	138	124?	60	100	100	88	38	38	35	35	43	42	51	23	91	24	45	515	428?	430?	350	345	305?	300?	255	253
88	174	174	136	93	130	131	68	113	100	91	39	38	38	38	47	35	54	24	97	28	47	505	425	425	348	346	323	318	253	–
89	172	172	137	98	136	131	64	111	100	98	40	39	36	35	48	35	45	27?	93	30	52	501	432	429	332	332	–	303	–	–
90	177	176	137	96	129	118	68	111	95	90	36	38	33	33	46	40	51	26	90	31	45	508	433	433	343	343	309	299	243	237
91	184	184	130	92	123	115	64	105	95	95	41	37	35	36	51	39	50	24	88	28	40	514	394	400	312	314	270	265	227	227
92	176	176	138	93	124	120	61	106	89	82	37	37	30	32	46	36	50	23	88	27	47	502	406	406	324	319	287	283	232	–
93	170?	170?	130	89	131	114	61	107	95	94	38	37	34	34	48	38	50	23	87	28	45	489	409	409	332	335	277	272	236	241
94	176	175	136	90	121	130	66?	109	99	89	40	38	32	33	47	38	52	23	93	26?	48	497	431	428	341	342	307	292	–	–
95	179	179	142	93	127	124	68	115	97	96	37	37	32	32	46	41	52	28	96	30	46	511	405	410	340	338	299	293	249	243
96	181	181	145	92	129	125	68	110	95	88	40	39	39	38	44	45	51	26	92	27	51	517	425	435	338	339	304	301	242	245
97	179	177	141	88	123	122	63	108	91	83	39	38	36	37	45	39	50	24	87	26	48	509	394	397	297	298	283	281	233	224
98	176	175	140	88	122	122	61	98	91	93	38	38	32	33	51	37	48	24	85	22	41	505	406	410	326	328	289	285	236	–
99	180	180	135	92	135	126	71	126?	99	90	43	41	37	40	48	38	54	25	98	31	54?	514	457	456	364	363	323	312	251	244
100	177	177	126	87	137	117	68	114	96	89	38	37	34	34	46	38	52	25	97	–	49	498	421	422	321	321	306	301	246	240
Mean	176·4	176·0	135·8	93·1	128·1	123·4	65·3	108·6	96·4	91·05	37·65	36·7	34·4	34·45	50·05	38·4	50·65	24·1	92·4	27·6	46·9	507·7	414·8	412·9	339·4	328·3	289·4	292·7	240·8	236·4



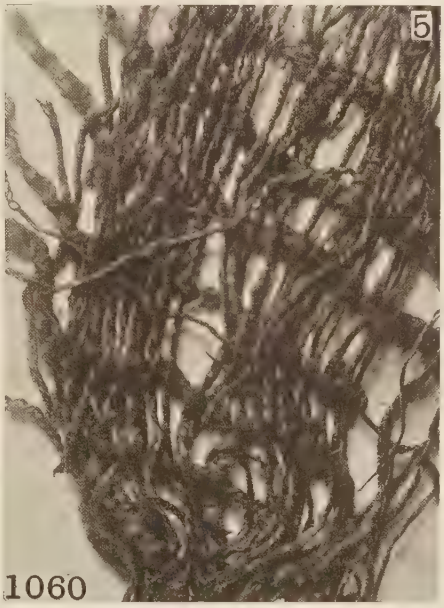
PRE-DYNASTIC RHAMIE FIBRE × 180



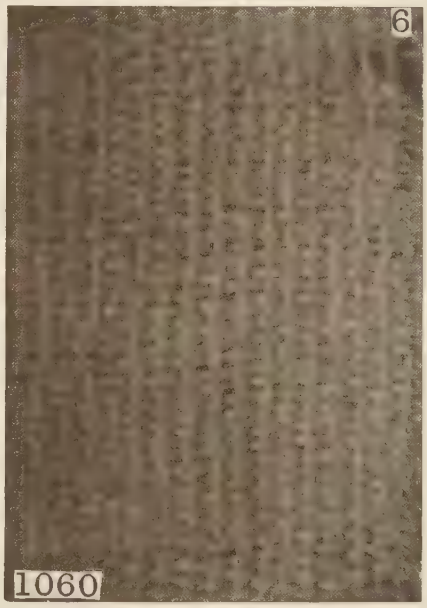
DYNASTIC FLAX FIBRE × 180

DYNASTIC FLAX FIBRE × 180

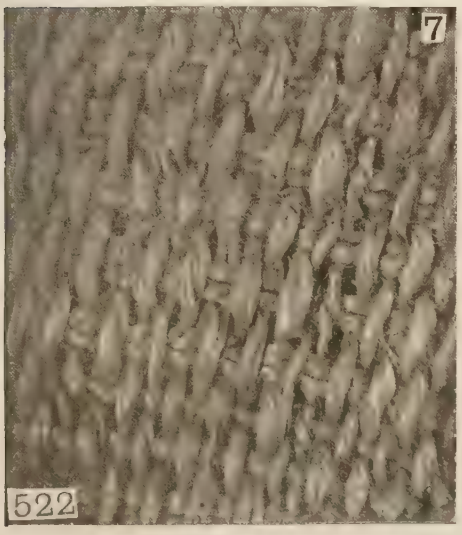
PRE-DYNASTIC LINEN × $\frac{2}{3}$



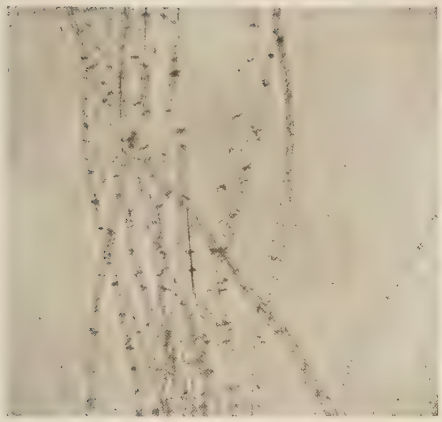
1st DYNASTY LINEN × 3



1st DYNASTY LINEN × 20



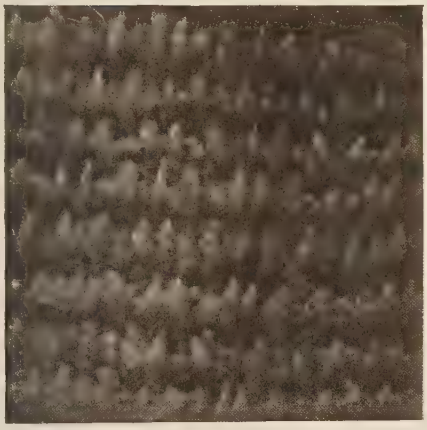
LINENS OF THE Vth DYNASTY



2050 FLAX FIBRES × 180

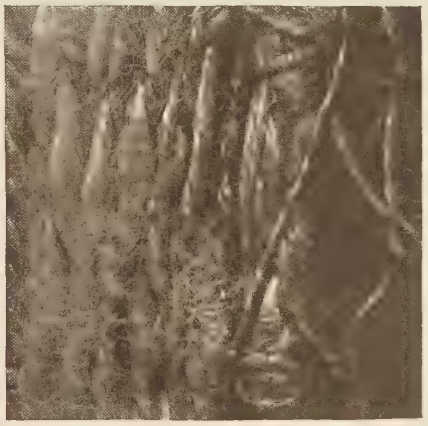
2050 FLAX FIBRES × 180

FINEST IRISH FLAX × 180



2038 × 18

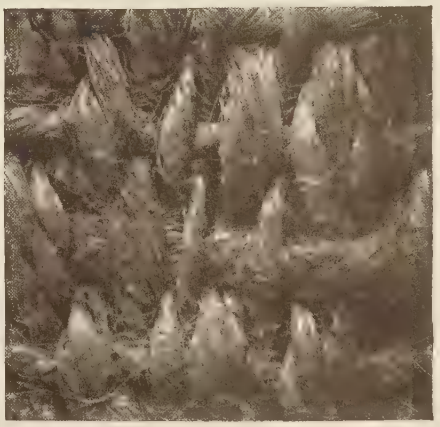
2050 WITH SELVAGE × 18



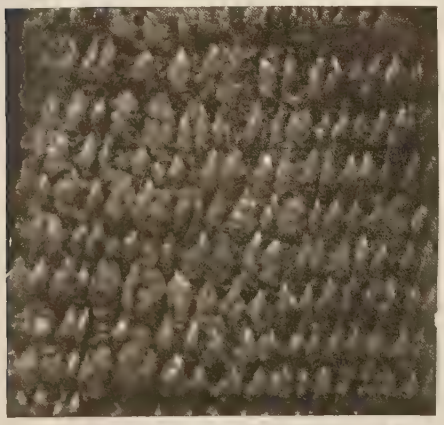
2050 WITH SELVAGE × 18

2050 DISSECTION OF SELVAGE 6 × 18

2050 BODY OF FABRIC × 18



2050 SHEWING PARALLEL WARPS × 18



2050 WITH TRUE SELVAGE × 18

2050 ALL DOUBLE YARNS × 18

2050 DOUBLE YARNS & PARALLEL WARP × 18

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